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ABSTRACT

Research sought to determine what effect viewing increased amounts of specific types of televised material would have upon the creative performance of highly intelligent children. Gifted students in grades 4, 5, and 6 of a suburban district were given Guilford's tests of creativity and then divided into seven groups. Six of these watched a specific category of program for three weeks; the seventh served as a control group. The categories were: educational television, cartoons, sports, comedies, drama, and "everything." Posttests were administered and analysis of variance used to measure the independent variable of sex, grade, and category of program viewed, and the dependent variable of change in creativity scores. The control group increased in creative ability, whereas the experimental groups declined in all areas except for verbal abilities, although the decline was not statistically significant for most areas. Younger children were more affected than older ones, and sex was not a significant variable. Children watching dramatic shows increased in creative performance, while those watching cartoons and, surprisingly, educational programs had depressed creative scores. The results were interpreted as a serious warning that current television programing is detrimental to children's creativity. (Author/PB)

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TELEVISION AND CREATIVITY
The Effect of Viewing Certain Categories of Commercial
Television Broadcasting on the Divergent
Thinking Abilities of Intellectually
Gifted Elementary Students

A Dissertation
Presented to
The Faculty of the School of Education
University of Southern California

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In Partial Fulfillment
of the Requirements for the Degree
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by
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This dissertation, written under the direction of the Chairman of the candidate's Guidance Committee and approved by all members of the Committee, has been presented to and accepted by the Faculty of the School of Education in partial fulfillment of the requirements for the degree of Doctor of Education.

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CHAPTER I

PRESENTATION OF THE PROBLEM

Introduction

More than 190 million Americans, which is about 94 per cent of the total population in the United States, have television sets in their homes. Twenty-five per cent of the more than 60 million homes in this country have at least two television sets. In the average home the television set is turned on about five and one-half hours a day.

The model American citizen will watch about 22,000 hours of television by the time he is eighteen. The typical American child will watch about 4,000 hours of television before he begins his first school day. Children graduating from the average American high school have devoted more of their young lives to watching television than they have to any other activity except sleeping. Upon reaching his eighteenth birthday this American child will have given two full years of his life to the television set. By the time this same youngster is twenty-one, he will have watched 264,000 commercials.

The rapid rise and spread of the television industry is not the only new development in modern America. There is a rising belief that this country, this planet, is in grave danger of running into irreversible catastrophe. Scientific indicators are showing that man might just follow the flight of the dodo into extinction. The threats to the world come from increasing violence including a desire to seek violent solutions to problems, the possibilities of wars of mass destruction either arranged or accidental, overpopulation, pollution, and depletion of resources. These problems have an interconnected and cumulative effect. A growing problem in one area renders it more difficult to solve problems in any other area. For example, money and intelligence and material spent to solve the problems of Vietnam deplete the efforts to solve the problems in other areas. These problems are ignored until they explode on the political and social scene with frightening immediacy. At that time the most visible of the problems receives attention, but the money and intelligence needed for this effort is drawn from efforts in other areas. The nation seems to live in one state of crises after another.

In order to survive, not to mention to develop the full potential of the good life, contemporary society must utilize the full potential of its human resources.

The achievement of this goal is a major concern, but the growing problems in this country indicate that this goal is not being achieved. In the sociological area, concern is developing over the idea of mass conformity and control: the "Nation of Sheep" analogy. Concern in education should be directed toward education of those who will assume the most responsible positions in the future society: the gifted.

In the education of gifted children, there is no objective more important than the development of creative ability. The present perilous world situation calls for new solutions to ever more complex and pressing problems, and the schools must take a full share of the responsibility for helping to solve these problems. The schools must make every effort to understand and deal with the factors that affect the creative and innovative potentialities of their students.

For generations high intelligence test scores have been equated with high mental abilities in all areas. However, since 1950, evidence has been accumulating which indicates that there are intellectual or cognitive factors, in addition to those measured by an intelligence test, that can contribute to educational achievement. Guilford (45) maintained that creative thinking was an intellectual function that was not measured in the typical intelligence

test. Guilford felt it was those special intellectual functions which contributed most to the variance between expected achievement, which derived from the IQ score, and the actual achievement.

Other researches have come to similar conclusions. In fact, Yamamoto, Torrance, Cropley, Getzels and Jackson, Anderson and others have demonstrated that the educational establishment is subtly prejudiced against creativity. Educational institutions prefer, and are subtly organized to reward, those who absorb and regurgitate the educational heritage. Gold, writing about the intellectually gifted, said that: "A tight little circle has been closed in which intelligence and academic performance are equated and creativity excluded." (40:130) Simply stated, educational institutions prefer to deal with convergent factors of intellect at the expense of divergent factors.

Talking to the National Press Club in late 1969, John Gardner (36) said:

As we enter the 1970's there are many curious aspects of our situation, but none more strange than our state of mind. We know what our problems are, but seem incapable of summoning our will and resources to act.

We see the brooding threat of nuclear warfare. We know our lakes are dying, our rivers growing filthier daily, our atmosphere increasingly polluted. We are aware of racial tensions that could tear the nation apart. We understand that oppressive poverty in the midst of affluence is intolerable. We see that our cities are sliding toward disaster.

And these are not problems that stop at our borders. The problems of nuclear warfare, of population, of the environment, are impending planetary disasters. We are in trouble as a species.

But we are seized by a kind of paralysis of the will. It is like a waking nightmare.

.
With a few notable exceptions, there has been a failure of leadership. More than any other factor, it is the missing ingredient in our situation today.

The Problem

Is there a connection between the massive amounts of television watching engaged in by the youngsters of America and the failure of American leadership to develop creative solutions to the problems that now threaten mankind's very existence on this planet?

It is not possible to bring America's present leaders to a laboratory for psychological examination, but it is possible to examine some of tomorrow's leaders and to try to determine the effect of viewing popular T.V. programs on their creative abilities.

The purpose of this study is to determine if performance by intellectually gifted students on selected tests of creativity was affected by viewing certain categories of T.V. programs. Tests of creativity were selected to assess both verbal and nonverbal tasks. Fourth, fifth, and sixth grade elementary school children in gifted classes were located in an area next to a modern, urban, metropolis. Children in this age group were chosen

because these are the ages that tend to watch the greatest amount of television.

Hypotheses

The independent variables in this study are: (1) grade, (2) sex, and (3) category of program watched during the course of the experiment. The dependent variables are the scores on the various creativity tests used. The main hypothesis of the study can be stated in several ways, as follows:

1. Viewing a certain type of program does not affect performance on creativity tests.
2. Viewing a certain type of program adversely affects performance on creativity tests.
3. Viewing a certain type of T.V. program improves performance on creativity tests.

Many sub-hypotheses can be generated from the above three statements. These sub-hypotheses stem from the many interactions possible between the independent and dependent variables. For example, it may be proved that a certain type program has one affect with males, but another with females, or that results for the fifth grade are not true for the sixth grade children.

Definitions

Creativity is defined as certain intellectual functions which can be measured by instruments constructed by Guilford. Further elaboration of these functions are detailed in the descriptions of the evaluative instruments.

IQ. IQ is Intelligence Quotient and refers to scores the children received on standard WISC's administered by a certified school psychometrist.

Gifted Child. A child who has received a score of at least 130 on an individual WISC examination is referred to as a Gifted Child.

T.V. Categories: (1) Educational - this refers to programs whose purpose is either to inform or instruct the viewer. It includes Sesame Street, the Electric Company, News programs, and various specials. (2) Cartoon - this refers to any program that is animated. Typical examples include Flintstones, Bugs Bunny, Banana Splits, etc. (3) Sports - this refers to programs dealing with athletic events such as football, basketball, hockey, etc. (4) Comedy - this refers to programs whose aim is to provide humor. It includes serial comedies such as I Love Lucy and children's specials such as Snoopy or Dr. Seuss. (5) Drama - this refers to programs which attempt to entertain the audience on a realistic level. The programs may be movies or serials such as Adam 12, Hawaii Five-O,

and even Lassie. (6) Everything - this category refers to the programs usually watched by the children but viewed for an increased amount of time during the course of the experiment.

Limitations

Creativity is a personality function as well as an intellectual one. The potentiality for creativity is affected by environment as much as by genetic heritage, but it is not possible to predict creative development with any real accuracy. These factors are beyond the scope of this study.

An ideal study would be to contrast a group of students who do not watch any T.V. with groups viewing the categories described above, but in modern America it is not possible to find any group of intellectually gifted students who do not watch T.V.

The study to be really accurate should be longitudinal and run for several years rather than months, but economic and humane considerations to the students involved make this impossible.

Attempts have been made to make the selection of students as random as possible. To be able to generalize widely from this study the sample should be not hundreds but thousands of gifted students from many areas of the country, but such a wide program is not possible for this

investigator. The sheer logistics of the undertaking would demand a team approach with sizeable funding.

Outline of the Study

Chapter II deals with a review of the research to acquaint the reader with the existing body of knowledge in this field. Chapter III describes the methodology of the experiment and the design of the approach. Chapter IV details the findings of the experiment, and Chapter V summarizes these findings along with the conclusions and recommendations which were made from them.

CHAPTER II

REVIEW OF THE RESEARCH

Creativity

Few words conjure up more meanings or more heated controversy about their meanings than does the word "creativity." No single, simple definition of creativity can adequately summarize all the definitions of this word. Rhodes (102) collected over 50 definitions from which he isolated four categories: (1) person, (2) process, (3) press (which represents the interaction between human beings and environment), and (4) products.

Person. The traits of personality attributes of the creative person have been studied at great length by a variety of researchers such as Fuqua (33), Holland (64), MacKinnon (77), Markesberry (87), and Torrance (129, 134), to name a few. The list of personality attributes they have identified includes such attitudes as curiosity, openness, objectivity, flexibility, fluency, sensitiveness to sensory stimulation, humor, self-confidence, intellectual playfulness, indifference to conformity, willingness to try new ideas, willingness to be alone, and an ability to work intensively for long periods of time.

Along with this are requisite intellectual skills such as the ability to see relationships, to appraise data, to translate and see meaning, and to transfer generalizations and principles to new situations. Also essential to the use of these critical intellectual skills are appropriate knowledge and psychomotor skills required to work with various materials and data.

Process. Guilford (48), and others, have emphasized that creativity, like intelligence, means a potential for creation. Whether or not the individual potential is productive depends on other circumstances including special motivation, environmental stimulation, and opportunity. With this assumption, the study of creativity can be pursued via test performance. The major operation in these experiments was determining what intellectual factors are vital to creative acts, and selecting test items which measured the subject's capabilities with these same intellectual factors. The great drive in this field has been for statistical significance. Some of the chief researchers in the field have been Guilford and his followers, Torrance, Getzels and Jackson, Taylor, Yamamoto, and also MacKinnon. (The approach of MacKinnon (77) was somewhat different from the others in that he used tests of creativity with persons of acknowledged creativity rather than with subjects of unknown potential.)

Torrance, Guilford, MacKinnon and Razik stressed the process of creativity. Razik's operational statement summarized this quality. He said:

Creativity involves the ability to produce original ideas, to perceive new and unsuspected relationships, or to establish a unique and improved order among seemingly unrelated factors. Creativity does not involve just one kind of behavior. It operates in various fields of human endeavor. It is a potential that all people have, but to different degrees. (101:160)

Many researchers, among them Torrance (126), Wallas (140), and Patrick (96), have identified four steps or stages in the creative process. These stages are labeled as: preparation, incubation, illumination or insight, and revision. First the creative person identifies a problem or a dissatisfaction, which is strong enough to promote his activity. Second, this stage is followed by study, discussion, and thinking about the situation. Third, from these phases comes some kind of insight. Fourth, the idea produced is followed by experimentation, evaluation, selection, and possible perfection.

The sophistication of the process depends upon such factors as the maturity, ability and past experience of the person involved, and the nature of the environment in which the problem is to be solved. Dewey (28) identified a process as creative if it were original with the creator. Guilford (48, 49) likewise suggested that all individuals had some degree of potential for creativity.

Press. Rollo May and several other existential psychologists have seemed most concerned with the combinations of person and press in their definitions. May (89:68), for example, defined creativity as "the encounter of the intensively conscious human being with his world." Rogers, who shared May's psychological convictions, maintained that the creative process was "the emergence in action of a novel relational product, growing out of the uniqueness of the individual, and the materials, events, people, or circumstances of his life." (103:70) Also concerned with the interactive definition of creativity was Ghiselin who declared that the creative process was "the process of change, of development, of evolution, in the organization of subjective life." (38:12)

Product. In thinking about creativity most people discuss creative products, because these have a higher visibility and are more lasting than factors of personality. They are even, as is the case of art products, or literary works, products which far outlast the creator or the civilization in which they first were developed.

The great controversies in this field arise from differing value judgments about the creative product. What is thought to be creative in one age is ignored as crude in the next generation, only to be thought creative in another time and place. Taylor (119:38) tried to make some sense

in this area by suggesting a stratification of creativity levels ranging from elementary to complex creative products as follows:

1. expressive creativity (products of brainstorming, for example)
2. productive creativity (related to number of products produced)
3. inventive creativity (which couples efficiency and ingenuity with available materials and ideas)
4. innovative creativity (involves a complex rearrangement of a total field, such as the cubist movement in art, or electronic music)
5. emergentive creativity (which alters a total field as did the works of Darwin and Einstein and Freud)

Yamamoto (145) tried to simplify the complexities stemming from the many definitions of creativity by reducing the philosophical frameworks of these conceptions to either a "holistical" or "elementaristical" approach.

Holistic thinkers, such as Rogers, MacLeod, Mooney, Lowenfield, Wertheimer (and the Gestalt School), and to some extent MacKinnon, derived their studies from the idea that creativity was greater than the sum of the forces, intellectual, genetic, or environmental, which distinguish

the creative person. MacLeod said:

The psychologist who insists that creativity can be studied scientifically must bear the burden of proof in the face of centuries of testimony from mystics and artists, and even ordinary people (in extraordinary situations) who claim that, at least in his moments of inspiration, man is not subject to the laws of nature. (80:178)

Scholars in this field, like Wolf in music, and Lowenfield or Kellogg or Ballo in art, delight in pointing out that artistic talent, sensitivity and creativity can continue to function in the individual even if much of his brain is lost to accident or disease.

Elementaristic thinkers, such as Guilford, Maltzman, Staats and Staats, and others preferred to work from the analytic technique. The chief emphasis was on the construction of the model from factor analysis. The whole, to these thinkers, could be broken into its parts, and the relationships between these parts analyzed and comprehended. Musicians deal with sound, comprised of tones, timbres, rhythms, pitches, and other dynamics. Artists deal with visible media, and writers with verbal concepts, words, grammatical constructs, ideas, symbols, and metaphors.

Similarly the interaction of person and environment can be understood, according to some elementaristic thinkers, by simple factors of operant conditioning. Creativity, according to these views, is allowed to

develop if the individual is some way rewarded for demonstrating that type of behavior by those persons most important in his particular environment.

DeHaan and Havighurst (59:176), studying the education of gifted children, pointed out several blocks to creative thinking. They said the normal desire to be creative, which is shared by most children of primary school age, can be stifled by normal classroom practices. Some of these practices are:

1. The use of high standards of achievement for low levels of work. Children are rewarded for conforming not to the best of which they are capable, but to the mediocrity of the average performance of their age group.
2. The use of inflexible, rigid assignments and methods of work, such as memorizing test material for which there exists only one right answer.
3. The impatience of adults, such as the teachers who can't bear to see children fail, or who can't tolerate children's work that falls short of their own ideals and standards of perfection. This impatience is usually demonstrated by criticism. In art classes it sometimes takes the form of having teachers draw the pictures which the children have to fill in with color.
4. The teacher's attitude often communicates the teacher's own dislikes and prejudices, especially the fear

that the child will grow up and leave the teacher's control, guidance, and domicile.

Yamamoto (149:24) also worked in this area. He found that an important factor, which produced very different levels of creative achievement, was the creativity of the teacher. In his study he examined the effect of high and low teacher creativity on all members of the fifth grade in a school system. Yamamoto noted that children of low creative ability easily surpassed highly creative pupils when the teachers were themselves low on creativity. This reverses the tendency for highly creative children (determined by divergent thinking abilities) to surpass highly convergent youngsters in academic ability.

There are three additional principles which are representative of modern thinking in the field of creativity. They are: (1) the psycho-social, (2) the bio-educational, and (3) the cause-effect.

The Psycho-Social. Freud (32) had argued that there were two main processes regulating ideas - primary processes and secondary processes. Primary processes are free of the restraints of logic, but secondary processes, on the other hand, are strictly rational and logical. What happens as an individual matures, according to Freud, is that he is increasingly obliged to depend on secondary

process thinking. This is because he learns from his culture what goes with what, what is allowable, what isn't, and so on. Primary process thinking, which permits apparently quite separate ideas to run together, which tolerates ambiguities and apparent contradictions, and which features the formulation of loose connections between radically different thoughts, is firmly rejected by most people as their thinking becomes highly logical, rational, and predictable.

Creative thinkers, on the other hand, retain the capacity to admit primary process material into their thinking, and their thinking is considerably enriched by the ideational images which have been so strictly repressed in the person completely dominated by secondary thinking processes.

Freud suggested that impulsive expression was an important personality characteristic. During infancy, strong pressures are brought to bear on a child to make him suppress natural urges and to express them only in a desirable way and at a desirable time - for example, during toilet training. The child may internalize parental injunctions, and gain social approval, or he may fail to do so and even deliberately reject these dictates. The first child, who has done what was expected, receives his social approval, but often this is at the expense of

suppressing his primary impulses. The second child fails to learn the rules of the game, or perhaps learns them and refuses to be bound by them, and his behavior is likely to be non-conformist, original, and independent. This is often achieved at the expense of having to resist the culture's pressures to conform, and the child will always have to face the consequent probability of censure and harrassment, or worse, for this unconventionality and failure to abide by the rules of the game.

Barron (13) conducted some studies to test these thoughts which seem to link the less controlled personality with the creative one. He used the term originality to represent a complex mode of responding to the environment and tried to connect it with personality organizations characterized by such traits as rebelliousness, disorderliness and independence of judgment.

In a 1963 study Barron (11) showed that highly creative officers in the U. S. Air Force scored significantly higher on impulsivity than did their less creative colleagues. This tendency towards impulse expression remained significantly associated with high creativity even after the effects of intelligence were removed. From this evidence Barron concluded that creativity was directly related to impulsivity.

This research is supported by studies of MacKinnon

(76), Garwood and Tyson (26). Hudson (66) discovered that uncreative people, personalities who are noted for their adherence to secondary process thinking (whom Hudson called "highly convergent thinkers"), can be made to perform in divergent ways (creative, primary process thinking) by inviting them to pretend that they should act as if they were artists or Hippies. More serious is the study which shows that this same creativity can be fostered by the selective use of drugs and alcohol (67).

It is the family through which the emerging personality receives his earliest training. Many researchers have examined the nature of the child's upbringing to determine its affect on creativity. Drevdahl (30) studied the childhoods of creative scientists looking for the extent to which they had been given responsibility at early ages. The more highly creative members of the group he studied came from home backgrounds where there was little coercion to produce "right" behavior. Like the parents of MacKinnon's creative architects, the creative scientists' parents expected them to behave in a reasonable manner, but the expectation went unenforced. The children's upbringing was noted for the personal responsibility each child had for his or her own behavior. MacKinnon pointed out that the architect's parents were remarkable in the extent to which they respected the

opinions of their children, and were confident about the children's abilities to do what was appropriate in any particular situation.

The parents of these children even allowed them to make decisions for themselves early in life. MacKinnon (76:174) summed up ideas on child raising with the statement that: "The parents behaved always as if they expected the children to act independently and yet still reasonably and responsibly." This kind of treatment was reflected by the children developing an unusual sense of personal autonomy. MacKinnon felt that it was this sense of personal autonomy which underlaid their high capacity for creative behavior. Parents of these highly creative architects were notable for their lack of intrusion into their children's intellectual privacy.

In another similar study Stein (109) found that creative research chemists had been more distant from their parents as children, and that the children had engaged in more solitary activity than had non-creative chemists. Stein pointed out that this lends credence to the theory that lack of intrusiveness, especially intellectual intrusiveness, on the part of the parents, is important in the development in children of divergent patterns of thinking.

This may be summed up by saying that the kind of

parents who tend to foster divergent thinking in their children are those who permit the child to function independently and treat him as a worthwhile person with worthwhile views of his own. They learn to respect his views. The opposite kind of parent has his child's life carefully planned in advance, regards him as needing constant guidance, and is vigilant in giving that guidance. This kind of parent, according to Stein, Hudson, and others, places a great deal of stress on logic and order. The parents of creative children are much more tolerant of playful, non-logical, regressive behaviors, and these behaviors often result in generating creative abilities.

As the child matures he comes under the influence of social functions. The first institutions he encounters is the family, the local neighborhood, (peer group) and the school. All exert an influence on creative functioning.

Bloom (17:56) suggested from observations in India that when people are suppressed in economic, educational, political, and social areas, creativity is inhibited. The reason for this is that under difficult conditions the possibilities for alternate courses of action, thought, and expression are severely reduced. In a country where 80 to 90 per cent of the population must work as farmers just to survive, it is most probable that

many youngsters, possessing all the characteristics of creative personalities, will have to work as farmers - an occupation not noted for its creative approach.

Torrance (129:135) in an attempt to study the development of creativity in different countries of the world tested children from six cultures. Each grade level, from the first through the sixth grades, was tested using three nonverbal and six verbal tasks. Torrance's conclusions indicated that the results from the originality scores on the nonverbal tasks were more significant than the verbal scores. Overall, Torrance concluded, the patterns of the developmental curves and levels of creative functioning, found from one culture to another, could be explained logically on the basis of the nurturing influences of the cultures.

Kneller summed up this idea by saying:

The main obstacles to the growth of creativity seem to be cultural rather than biological. The child himself does not abandon creativity spontaneously, but does so under pressure from adults who want him to think and act 'realistically.' (70:143)

The Bio-Educational. Hudson (66) and Wilson (142) commented on a characteristic of creative persons which is difficult to analyze. Hudson noted the significantly greater frequency of humorous responses among creative people when contrasted to convergent (non-creative) personalities. Hudson went further when he linked this

avoidance of humor among convergers to a general tendency on their part to (rigidly) compartmentalize experience. Hudson suggested that the converger was a person who achieved a sense of security by restricting himself to a relatively narrow range of impersonal technical topics. Wilson found that tests of humorous ability, such as writing funny captions on pictures, or selecting the best punch lines for a given joke topic, could be used to segregate creative from non-creative personalities with a high order of statistical significance.

Gordon (42) worked with the idea of play since playful has been described as a characteristic of creative personalities. He thought the trait might manifest itself in the ability to play with words so that the users saw new aspects of them which have not previously been seen. They might also play with the meanings of fundamental laws or principles and eventually arrive at unusual solutions to problems, or they might play with common objects until they saw implications with them they had not previously noticed. What such play involves, essentially, is the capacity to look at the familiar in a new light, and to break the set imposed by the stereo-typical meaning of any stimulus. Many creative people, including Einstein, have made this point about their own creativity.

Smith (112) noted the experiences of disadvantaged youngsters in Head-Start programs in playing with the materials the program made available to them. Smith was surprised to see that objects put out as toys to free the imagination, such as blocks which resembled trains, building sets, art media, etc., were treated by these youngsters merely as objects to be flung around. Smith felt the children did not know how to play, and he defined play in the Piagetian theme of transformation - the ability to make the stimulus over into something else. Smith felt these youngsters lacked a critical element of fantasy, or imagination, in their intellectual make-up.

Goldberg (41), MacKinnon (75), Stein (109), Nuss (93), Pogue (98), Smith (107) and Havighurst (59) all tried to study the relationship between creativity and socio-economic status, and found that the two factors were positively related, though the significance was less significant at the extreme ends of the scale. That is being in the highest economic category did not mean one had to have the highest creativity.

A more complex view of the activity of creativity is given by Mednick (90). He thought that creativity involved the formations of associations between stimuli and responses which were noted because the elements comprising such associations and stimuli were not normally

associated. Mednik suggested that divergent people tended to link stimuli with highly unlikely responses, whereas with most people a particular stimulus was usually linked with the response with which it had been most frequently paired in the past. Highly divergent people are particularly skillful at linking together, in an effective way, aspects of their environment which on the basis of experience do not really belong together. In most people such happy stimulus-response linkages seldom occur, except perhaps serendipitously by chance, whereas they are more or less commonplace among highly creative individuals.

Pribram (99), working on the same theory, pointed out that these original productions did not arise by chance alone in the creative individual, nor were they totally unrelated to the person's past life. Pribram believed these linkages represented an extension of the already known. Pribram expressed the thought that creativity must arise out of conventional knowledge. He felt that what was involved in divergent thinking was a concern with extending the boundaries of the conventionally known; an attempt to widen the existing structure. Pribram wrote that creative thinking occurred when the boundaries of the known were first mastered, through convergent processes, and then extended by the application of divergent processes.

Bruner (20) also spent time detailing the relationship between creativity and convergent type thinking. He felt that conventional-type thinking provided an essential foundation on which the divergent thinker built. Bruner pointed out that in many fields creative solutions could only occur when the relevant field of subject matter was thoroughly known.

In a recent development of this thought, Bruner expanded this idea. He argued that the major kind of intellectual behavior consisted of reorganizing data input from the external world in such a way as to reduce the cognitive strain of information processing. Bruner called this data reorganization a type of coding, an attempt to fit data into certain categories. Creative thinking occurred when the codings resulting from this process of combination possessed the property of "effectiveness" and "surprise." Most important to Bruner was the factor that the combinations or codings were far from random attempts at grouping data. They were definitely related to the coder's previous experiences. They were not blind stabs, but effective insights based strongly on knowledge of the subject matter and of the relevant rules of the game.

McClelland (81) was one of the first to suggest that there might be an IQ threshold below which divergent processes could not operate, and above which they became

independent. McClelland argued that there was a close relationship between IQ and achievement until some critical level was reached and after which the level of achievement was no longer related to IQ but to other factors, and creativity was one of the more important "other" factors.

Anderson (1:40), too, made the suggestion about a cut-off point in IQ where effective functioning would begin to depend on other factors. Thus, he developed the idea that at lower IQ levels creative achievement would be related to the level of IQ, but that after a minimal IQ level had been reached, creative abilities and functioning would become independent of IQ. Like Bruner's ideas, this can be summed up by saying that divergent processes can only come powerfully into play if convergent processes had been sufficiently developed to permit appropriate mastery of the field.

All these reports dealt with the relationship between creativity and intelligence. As early as 1942 McNemar (84) discovered that children of parents in the higher occupational classes, such as professional and managerial, tended to have higher IQ's than children of parents in the lower occupational levels. Children of professional parents averaged about 115 on the revised Stanford-Binet, while those of day laborers averaged about 95.

Terman's (121) study of the gifted also supported this thesis. About one-third of his subjects came from the families of professional people, about one-half came from the managerial classes, and only a small proportion from the working classes (about seven per cent). This is quite out of proportion to the actual numbers of people in each of these classes and it indicates clearly that more intelligent children develop from the higher socio-economic classes. The two reasons for this relationship is that children of higher intelligence generally marry children of higher intelligences, thus passing their skills on genetically; and that the higher economic classes selectively reward their children and thus condition them toward higher intellectual performance.

In actual cases the ensuring successes of the majority of Terman's subjects seems to prove this point. Terman was able to keep contact with nearly 700 people in his study through 25 years. Of these, 150 were very, very successful as judged by such criteria as (1) being listed in Who's Who or American Men of Science, (2) holding responsible managerial positions, or (3) receiving recognition for outstanding intellectual or professional achievement.

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that it takes a certain level of experience to achieve technical facility in a given field, and the second fact is that technical facility is more often developed, especially in intellectual fields, by children who perform on the higher levels of intelligence tests. The third fact is that such children tend to come from the higher socio-economic areas, and the fourth fact is that such children are the ones who achieve the more responsible occupations in modern society. The question is: Do more highly creative children come from parents with higher IQ scores?

Tibbets (124) at USC wrote a doctoral dissertation that attempted to link creativity toward variables concerned with race, age, socio-economic status, and educational achievement. He found a significant positive relationship between high IQ, race, and creativity.

As a part of a larger study Smith (107) compared 60 fifth-grade children who had scored above 120 IQ on the Ku. lman-Anderson Intelligence Test with children who had scored 90 to 120 IQ on the same test. These children were matched on the basis of sex, race, and socio-economic situation and according to school and classroom. Each of these children was then given a battery derived from the Guilford Structure of the Intellect which included tests of intellectual fluency, flexibility, and originality in

both the verbal and nonverbal dimensions.

On eight of the fourteen verbal creativity variables, the intellectually gifted were superior to the normal subjects beyond the .01 level of significance. No differences were found between the groups on the seven non-verbal factors. These results seem to support the contention that whenever there is a broad range of intellectual ability, those with high IQ's do better on so called creativity measures than those of average or below average IQ. Smith also found that performance on these creativity tests were related to sex (girls outperforming the boys), race (whites outperforming the Negroes), and socio-economic status (the higher the socio-economic status, the better the performance). These results held only for the verbal tests. On the non-verbal tests, children of lower socio-economic status did relatively better. (The results support the findings of the Terrance cross-cultural study mentioned previously.)

The Cause-Effect. Kneller (70) was among the first to point out that though divergent behavior often seemed to involve impulse expression, and impulsive personalities, that was far from meaning that expressing inner impulses was to be viewed as being synonymous with being creative. Despite the art critics and Jackson Pollack, hurling splashes of paint at a canvas in a random manner cannot, of

itself, be called artistic creativity.

Similarly, Kneller wrote that mere unconventionality was not in itself creative, just as Guilford (51, 53) admonished his test users that mere production of an answer different from all others was not, by itself, an example of divergent production. At the most, unconventionality is an accompaniment to the creative process, and not really the thing itself. Quick wit, or highly developed verbal skills, or other such attributes such as perfect pitch, natural rhythm, visual memory and acuity, etc, are pointers to creativity, rather than the thing itself.

Kneller (70) felt that the mere scrapping of the conventional did not produce essential creativity, because the most important thing about the creative process was that it should lead to the production of worthwhile results. These results sometimes have a compelling property about them which identifies them immediately to the knowledgeable observer. Kneller referred to this desire to produce a worthwhile result, this compelling quality, as "relevance."

Bruner (20) also wrote that the defining attribute of the creative production was that it was "effective." In some creative people, the search for effective end products is so compelling that it shows up in a complete

dedication to the creative activity. In American and European culture this is most clearly evidenced by great artists such as Beethoven and Mozart and Rembrandt, and even athletes who practice long hours and endure great physical hardships.

Another cause-effect relationship on creativity is the effect of the agents of culture - or society's institutions. Some of their effect on individual creativity has been previously reported in the Torrance study of children raised in six separate cultures. Neill (92:26) also referred to the negative influence of schools, as institutions. He wrote that even the classroom walls and the prisonlike buildings narrow the teacher's outlook and prevent him from seeing the creative essentials of education. The creative, emotional, vital part of the child are foreign territory to the teacher.

Schrank (105) writing about the hidden effects of institutions as institutions, noted that institutions tended to be static and change resistant, primarily because the institutions' main unstated job was preserving its own existence and increasing its area of control and dominion.

Institutions also tend to dehumanize those within their care. This contention is supported, according to Schrank (105:26) by the following features of modern

institutions like schools, hospitals, mental institutions, prisons, armies, etc.: (1) A new client (recruit, student, inmate) becomes just one of the group. He might even be assigned a label, number, symbol, and referred to by that token instead of his individual name. (2) A small group governs a large group, is segregated from the large group (separate washrooms for example) and the governing group considers itself superior to the governed. (The government is not noted for participation on the part of the governed.) (3) Rules and regulations are made for the convenience of the staff, and are not subject to review by the governed. (4) The atmosphere of the institution tends to be drab and sterile. The design reflects easy maintenance and security. Fences, bars, locks, walls, long hallways, too bright fluorescent lighting, bells, and many clocks are common. (5) Privacy is rare. (6) There are various restrictions on freedom of movement. The institution devises systems that make it easy for the staff to keep track of its members. (7) There exists some form of censorship. (8) There is an elaborate system of rewards and punishments, often conformity with established rules and procedures is the only successful way out of the institution. (9) Dress codes are made and enforced. (10) There is an established pecking order. (11) There are entrance and exit rituals. (12) There are restrictions on sexual

activities.

Dempsey (27:108), in an article called, "Man's Hidden Environment," wrote that the surroundings, even the furniture, could subtly influence the functioning in a given environment. He quoted psychologists who felt that the rapid build-up of gleaming, glass-walled schools and office buildings could partly explain the existential anxiety so pervasive in the industrial countries. Dempsey wrote about the time the Napa State Hospital in California was heavily damaged by an earthquake in 1906. To the surprise of the authorities, when the psychiatric patients were moved into tents and were no longer walled in, their behavior and cooperation improved measureably. Epileptics undergoing treatment experienced fewer seizures and, in general, the tent colony seemed to benefit everyone, even the staff. But when the buildings were restored, behavior returned to normal - patients became difficult, and the epileptics had more seizures.

Dempsey briefly mentions ecological variables such as noise, smog, and population densities as factors that contribute to personality, and as such have an effect on creativity.

His work is of importance to the field of creativity in schools because it shows that the very chairs the students sit in, the food they eat in school, the closeness

of the school to major traffic arteries or airports, and the design of the school itself, will all contribute to the student's creative functioning.

These hidden factors might be the psychological villains that are responsible for the dislike of creative performance by many teachers. Torrance (65) and Yamamoto (149) both pointed out that although teachers have knowledge of the fact that human beings learn best when they learn creatively, they more often tend to use authoritarian methods in their classrooms. The dislike of teachers for highly creative students has been adequately detailed by Getzel's and Jackson's (37) studies, which have been replicated by Torrance (128), Yamamoto (148), Cropley (25), Wallach and Kogan (139). The teachers fostered an attitude which indicated to the students the institution's disapproval of question-asking, guessing, getting preoccupied with tasks, having the courage of one's convictions, being emotionally sensitive, being independent in thinking and judgment, being intuitive rather than cognitive in making associations and implications, being willing to take risks, and most important, demonstrating an unwillingness to accept society's authority.

On the other hand, the teachers seemed all too willing to encourage in their students a willingness to accept the judgment of approved authority, a desire to be

obedient and follow rules, a desire to be industrious but in proper spheres of activity, getting work done on time, and a desire for being considerate of others.

The next section of the review of the research focuses on the brief history of commercial television. When commercial television broadcasting first appeared in America it was heralded as a great tool which would elevate the masses and uplift the general culture. Recent Congressional debate, as well as the findings of the Surgeon General, seem to indicate that this goal is not being met. The failure of American society to evaluate and control the forces of television are indicated in the following section.

Commercial Television

A Short History of Commercial Television

There is no single inventor of television. Television is the product of widely spaced discoveries by many men from many nations. The beginnings of today's functional television set go back 131 years. In 1817 a Swedish professor named Jons Berzelius discovered that selenium, a substance derived from sulphur, could conduct electricity. In 1873 a British telegrapher named May discovered that this same selenium could be used to transmit light by electricity. In 1834 a German named Paul Nipkow made the

first T.V. set, using what he called a scanning disc - a disc that picked up the transmitted picture bit by bit through peepholes and re-etched it on a light-sensitive tube.

Six years after Nipkow first transmitted these crude shadows, two other Germans, Julius Elster and Hans Geitel, built the first photoelectric cells, which were the keys to modern T.V. cameras. In 1907 a Russian, Boris Rosing, and an Englishman, A. A. Campbell-Swinton, unknown to each other, both developed a cathode tube which would store light for the camera.

A young Scot named John Baird received considerable financing in England to produce T.V. sets using the Nipkow mechanical disc principle. Charles F. Jenkins did the same in the United States. Some T.V. sets were even sold in the late 1920's, but their pictures, usually orange and black, were much too small and reception much too uneven for any kind of success.

The 1920's did see the search for a functional television move from the home-built laboratory to the lavish and well-endowed laboratories of companies such as General Electric and Radio Corporation of America. This is important in understanding the later growth and development of the T.V. Industry. Since the already commercial radio industry took upon itself the task of making tele-

vision work, it became inevitable that T.V., when developed, would operate within the image of commercial radio. Edgar H. Felix of the staff of Radio Station WEAJ wrote in the late 1920's:

Television will find a complete structure ready to commercialize it. Broadcasting stations have organized personnel and established contacts in the advertising field. Consequently, there will be no long period of adjustment and development. Advertising will be ready for the visual medium before the visual medium is ready for advertising.

A Russian immigrant to the United States, Vladimir Zworykin, doing research for Westinghouse Electric developed the iconoscope from the Campbell-Swinton cathode tube principle. After this discovery he switched his allegiance to the Radio Corporation of America.

The nation's first major telecast was staged by the American Telephone and Telegraph Company. In 1927 Herbert Hoover, then Secretary of Commerce, made a speech that was telecast from Washington to New York City over the 200 miles of AT&T facilities. Secretary Hoover spoke briefly on his pride in participating in such an historic occasion. The scene then switched to a studio in Whippany, New Jersey, and from there a comedian, known only as A. Dolan, provided T.V.'s first actual entertainment - he told funny stories in dialect.

As early as 1931 the H&W Corset Company conducted the first closed-circuit T.V. experiment, using telephone

company equipment. H&W displayed its new corset models before the cameras in Bell Telephone Laboratories in downtown New York while a buyer for Franklin Simon and Company viewed them at receiving sets located two miles uptown. The buyer bought \$5,000 worth of corsets.

The William Morris Agency made the first show-business use of television in 1926. A cumbersome set was built for use in a vaudeville act. The audience watched the picture go from one side of the stage to another. The act went over big, and so did the set. It was so heavy that one day it plunged of its own weight through the floor of the Baltimore theatre. No one bothered to rebuild it.

In 1928 T.V. got its first play, a one-act spy melodrama, "The Queen's Messenger," presented by General Electric's experimental station in Schenectady, New York. Amateur T.V. bugs, an advance version of the radio ham, reported receiving the performance as far away as the Pacific Coast. The picture received was three by three inches, but RCA promised a twelve by twelve enlargement in the near future.

In 1930 the National Broadcasting Company inherited the experimental television station from its parent company, RCA, and installed it at the New Amsterdam Theatre in New York City. NBC's first performer was

"Felix the Cat," a bug-eyed wooden doll mounted on a phonograph turntable so engineers could trace his movements on their screens.

The world's first regular television service was started in 1936 by the British Broadcasting Corporation, heir to John Baird's developments. The BBC's programs went on three times a day, for a total of three hours, and the picture was ten by twelve inches. Reception was on sets which amateurs built for themselves. Only 3,000 sets had been produced in two years. Some of the programs featured by the BBC were the 1927 Coronation, the Wimbledon tennis matches, the opera, top plays, and newsreels.

America developed its first regularly broadcasting station, NBC's W2XBS, in 1939. The first program was President Franklin D. Roosevelt's dedication of the New York World Fair. On the same day RCA put its first sets on sale to the public. Prices ranged from \$200 for the smallest set to \$600 for the ten by twelve inch screen. The first studio programs began three days later with a performance by Fred Waring and his Pennsylvanians. Only 400 sets were sold in New York the first months RCA offered them. Next year the prices were cut as much as \$200 a set, but the public remained wary.

On July 1, 1941, NBC's W2XBS, renamed WNBT for the occasion and CBS's WCBW went commercial. NBC's first

program was a Dodgers-Philadelphia baseball game. Its first commercial was a Bulova clock showing the time. These T.V. pioneers were willing to try anything. On the day after the Japanese bombed Pearl Harbor there came the rumor that German planes were on their way across the Atlantic to bomb New York. CBS T.V. crews immediately hauled a camera to the window and prepared to televise the bombers as they came in over Park Avenue.

World War II was an important time for T.V. Progress in radar, especially in transmission, antennas, and reception hastened the arrival of practical home T.V. by five years. When the Japanese surrendered, the broadcasting industry made immediate preparations to shift from sound to sight.

In 1945 only New York, Chicago, Los Angeles, Philadelphia and Schenectady had stations in operation and these could be received by only 7,000 sets, and 5,500 of these were in New York. The first coaxial cable went into operation in 1946 and the big networks began to form.

The birth of big-time T.V. in America was witnessed in 1947 and 1948. The big programs began being produced and going on the air: Kraft Television Theatre, Meet the Press, Howdy Doody, and Milton Berle. Manufacturers reached the point where they were producing, and selling, as many as 140,000 sets a month. The Federal Communica-

tions Commission was engulfed with applications for television station licenses.

By 1950 there were 100 stations operating and more than 4,000,000 sets. In 1951 the coaxial cable reached California, the Kefauver Hearings were opened, and the National Conventions were televised. Systems for color television were developed by CBS and NBC.

By 1960 there were 531 T.V. stations, 34,000,000 sets, and advertisers were spending more than a billion dollars a year on T.V. The Quiz Show scandals had taken place, and Nielson and Trendix developed rating systems. Television became a firmly entrenched member of the American family.

The latest developments in the industry include satellites which orbit the Earth at fixed points and allow instantaneous transmission of television between any points on the Earth's surface (and the moon's as well). Other innovations include closed-circuit systems, VHF systems, and developments in cable-television. The last allows more than seventy channels of programs to be broadcast and received from any point. Recently cable-systems have been working to make the home T.V. set a point of transmission as well as reception. Thus the home T.V. could broadcast to and from schools, libraries, stores, hospitals, factories, offices, etc. Television cameras are now placed

in bombs and rockets to guide them accurately toward their targets. With television, generals and admirals can be present at every battle, day or night, land, sea, and air.

Some scholars believe the entire industrial system of modern America is profoundly dependent on commercial television. John Galbraith (34:208), pointing to the billions of dollars spent by advertisers, and to modern methods of merchandising which demand a controlled market, felt that America's modern technology could not exist without commercial television. He felt that even without being aware of it, modern populations must be managed and regulated so that they will demand and purchase the goods and services prepared by modern technology. This can be more simply stated by the idea that a good part of the hidden function of commercial television is to make people less creative in terms of what they believe to be necessary to purchase. Galbraith did not elaborate this point.

The conclusion is that in American society television sets are virtually ubiquitous, and that the amount of viewing, especially by young children, is enormous. The rapid rise and spread of the television industry in America is an event unparalleled in human history. In less than fifteen years the nation developed, completed, and put into working existence, a communications system which could visually and verbally unite the nation, or

even the world.

Compared to this enormous impact in people's lives, the amount of tangible research on television is pitifully poor. Hard facts are wanting. The dynamics of broadcasting, the instrumentation, the hardware and economics are well known entities, but the implications, the far reaching effects on people's lives, especially children's have hardly begun to be studied. Some have been done. A review follows of those few research studies.

The scientific reports on the Surgeon General's Report about T.V. and violence show that there is considerable danger in having young children watch so many violent programs, and several U. S. Senators are demanding a rating system for T.V. programs, but there is a tremendous scarcity of hard data.

Benefits of Television

Logic does suggest that T.V. has some positive contributions to make. First, children regard television as pleasant recreation and other studies have detailed how powerful learning can be, if it is sought by the child himself because of the pleasure it provides. Secondly, television is totally non-punitive and, in contrast to most of the child's relationships with people, if it becomes threatening, he can control it completely simply by turning the set off or refusing to watch. Thirdly, tele-

vision presents a continuous parade of human models for the child to observe. Beyond displaying the varieties of people to the child, it can transport him visually to all those places, events, and experiences that he could not possibly encounter in person. Fourthly, television is our culture's major source of shared experience.

These capabilities are suggested, presently, only by logic, and have not as yet been shown to result in any lasting benefits to the child.

Television as a Model and Source of Information

In the limited research on television's effect on children, two related themes have received by far the greatest attention: television's effect on "violence" in children's behavior, and the operation of observational learning or "modeling."

The term "observational learning" means learning that occurs by watching others, without any direct reinforcement for learning, and without any overt practice. The child takes on the behaviors of the model without being induced or compelled to do so. This conclusion, by the way, that learning can occur in the absence of direct reinforcement, is a radical departure from earlier research which regarded reward or punishment as indispensable to learning.

There is now considerable evidence that children do learn by watching and listening to others even in the absence of reinforcement and opportunities for overt practice, and television plays an important role in providing opportunities to watch and listen. The number and variety of people available for children to observe, if nothing else, has been increased vastly by television.

By watching televised models, children learn both socially desirable and undesirable behaviors.

Research on desirable behaviors was compiled by Gerald Lesser (74:17) of Harvard University in his role of Director of Research, Children's Television Workshop, Sesame Street.

1. Observing altruistic models on film and television, children learn to model altruistic behavior (Bryan and London, 1970; Bryan and Schwartz, 1971; Krebs, 1970).

2. Observing kindness displayed by television characters, children exhibited kindness in test situations (Rosenhan, 1969; Rosenhan and White, 1967).

3. Watching models who display courage or self-sacrifice induces more courageous and self-sacrificing behaviors in the viewer (Bandura, Grusec, and Manlove, 1967; Bandura and Manlove, 1968; Bryan and Walbek, 1970; Walbek, 1969).

4. Observing television performers demonstrate affection induces more affectionate responses in the viewer (Frybear and Thelen, 1969).

5. Television viewing can also help one's self criticism (Thelen, 1969), self-control (Bandura and Mischel, 1965), ability to make moral judgments (Bandura and McDonald, 1963; Cowan, et al, 1969), the tendency to initiate social contacts with peers (O'Connor, 1969), and the inhibition of deviant behavior (Slaby and Pare, 1971); Walters, Leat, and Mezei, 1963; Walters and Parke, 1964; and Walters, Parke and Cane, 1965).

6. Television can even influence the tendency to be reflective rather than impulsive during problem solving activities (Debus, 1970; Ridberg, Parke and Hetherington, 1971).

Negative Aspects of Television

Aggressive and destructive behaviors also are affected by viewing televised models who display these reactions. Despite recent furore over violence in society being caused, or directly influenced by television, the direction of this particular modeling effect is still disputed, especially by the networks.

1. Viewing aggression induces aggressive behavior in the viewer (Bandura, 1969; Berkowitz, 1962; Bryan and Schwartz, 1971; Dubanoski and Parton, 1971).

2. Viewing aggression has a cathartic effect which reduces aggressive behavior in the viewer (Feshbach and Singer, 1971).

3. Viewing violence on the screen, in controlled experimental settings, indicates it (the viewing) is not a cathartic and actually makes more likely the fact there will be some violent behavior afterwards by the persons who have seen it (Schramm, 1961).

4. Children who watch excessive amounts of T.V. daily (five or more hours), are likely to suffer from symptoms of nausea, vomiting, sleeplessness, inattention, appetite disturbance, somatic head and stomach pains, acute anxiety, and slight trembling (Graven and Narkewicz, 1963; also Payne Fund Studies on movies, 1935).

5. Violence induces aggressiveness more easily in boys than in girls (Bandura, Ross, and Ross, 1963; Hicks, 1965; Maccoby and Wilson, 1957).

6. Models (in general) show the viewers that behaviors are possible, appropriate, permissible, and reinforced in a given situation. If the viewer has not thought up a particular action on his own, television will suggest the possibility to him. It will show the conditions under which the course of action is permitted or appropriate, and what the consequences of that action are likely to be (Liebert and Fernandez, 1969). Whether the

action is likely to be aggressive, if induced by viewing violent T.V. is partially dependent on the type and degree of violence depicted, the overall dramatic content, the personal attractiveness of the aggressor, the degree of prior exposure, the age, intelligence, aggressive predisposition, emotional state, and stability of the audience (Feshbach and Singer, 1971).

7. Slum, ghetto, and rural poor youths watch and believe the authenticity of T.V. entertainment, myth and fantasy, to a greater extent than the youngsters of middle class families. To the poor, T.V. represents a school of life, and to the more affluent, an escape. Further, the poor and culturally deprived tend to watch the greatest number of violent shows. More well-off (economically) children tend to watch comedy and variety programs (Greenberg, before National Commission on Violence, 1968).

It is clear that television's display of particular forms of behavior can act to legitimize those behaviors, because the viewer simply concludes that whatever is viewed can be done, if it can be shown on television. If it is appropriate for television, it is appropriate for the real world as well.

Martin Harris, writing for PTA Magazine, and Nicholas Johnson, the former FCC Commissioner both reported the fantastic amounts of violence broadcast on T.V. For

example, Commissioner Johnson (68) pointed out that during the first 74 hours of new programs in the new season (1970) there were 254 incidents of violence, including 71 murders, and/or suicides. This was up 54 incidents from a survey taken the previous year. NBC, the worst of the violent networks, had an average incident of violence rate of one every fourteen minutes, with at least one death every 45 minutes. Cartoons for children, many of whom cannot distinguish reality from fantasy, and who, because of age, cannot follow plots but simply respond emotionally to isolated images and scenes without understanding the context in which the scenes connect and make sense, exhibited an average of 28 incidents of violence every 45 minutes. The actions of many cartoons revolved around kidnappings, robberies, assault and battery, and crime was often presented as humor, complete with canned laughter.

Despite these figures Arnold (3:118), completing a study on the effects of a violent society on children, reviewed the last 12 of the 72 volumes on "Research Relating to Children," published by HEW since 1956. These volumes contain some 8,000 abstracts, but they revealed only nine studies relating to children's viewing of non-educational television. Eight studies strengthened the idea that television exerted a negative, undesired influence. One study suggested that children tended to

read more because of T.V., but it was a study developed from a questionnaire.

The significant fact is the lack of investigation into an area of such vital concern. Even the more precise studies can only suggest a relationship. The mechanisms, the workings, the control, the details, of the relationship are missing. Very few of the studies have even begun to move from the research laboratory to the real world.

Despite the Surgeon General's findings, the only suggestion made has been the adoption of a rating system, patterned after the one in use by the Cinema (and everyone knows how effective the rating system has been in limiting the amount of violence in the movies).

Specific Research on Television

The Himmelweit Study

The Himmelweit study (62), "Television and the Child," is one of the three existing large-scale studies of the effect of television on children that have been performed. In the normal course of events the Himmelweit study would have been considered dated material in a few years time. This is because the nature of television production changed greatly. The fact is the Himmelweit study is still used by the television industry to justify its broadcasting decisions. The television industry fails to mention several important limitations of the study.

A team of researchers, headed by H. Himmelweit of Oxford University, carried out the first research into the effect of T.V. on a group of children. The team was sponsored by the Nuffield Foundation in Great Britain. The study was conducted between 1954 and 1956, and featured the survey-questionnaire method with some 4,500 British children. Some in-depth interviews were conducted.

The first major limitation in granting significance to Himmelweit's findings is that the research was conducted at a time in England when T.V. programming was nonexistent in the morning, intermittent in the afternoon, and was totally suspended at 6:00 p.m. Broadcasting resumed at 7:30 p.m. and quit for the day at 10:30 p.m. During the time of the study there was only a single channel in operation: the government operated, non-commercial B.B.C. station. (In late 1956 England developed a second, privately-owned channel.)

In addition, during the major period the study was conducted, T.V. was still a novelty in England. The cost of acquiring a television set was very high, and T.V. at the time was not a major part of the culture for either the average child or his parents.

The upbringing and education of children in England of the late 1950's was quite different than that found in the United States. Family life, attitudes, and

social customs were different. The Himmelweit study suggests that T.V. watching affects children of differing cultures identically, but offers no proof of this. More recent studies, such as the Surgeon General's Report, come to a different conclusion: that watching T.V. affects culturally deprived children, or aggressive children, or highly intellectual children, or different aged children, in different ways, and to a different extent.

Himmelweit dealt chiefly with children aged 10-11, and 13-14, but at this age children become less dependent on T.V. Major dependence on T.V. starts at the pre-school age, and runs through the early years of primary school. British T.V. at the time of the Himmelweit study was so much of a novelty that the children surveyed did not have a history of prior associations with T.V. The effect of a new medium is quite different from that of one which is solidly established in the culture.

The method used by Himmelweit, surveys, questionnaires, diaries, and interviews, leaves a great deal to be desired. There is little control possible. There is also a good deal of difficulty in tabulating and analyzing the results. One is never quite certain if a response is true, or even whether it was written by the subject or his family.

Despite this, Himmelweit decided that T.V. affected

children in the same way as did other media. She wrote:

Television then, is not as black as it is painted, but neither is it the great harbinger of culture and enlightenment which its enthusiasts tend to claim for it. If television is a window on the world, it gives a view not very different from that provided in books, comics, films, and radio programs. Similarly, its capacity for broadening a child's horizons is not spectacularly different from that of any other of the mass media. (62:107)

One unfortunate side-effect of this research was that the Television Information Office, an educational foundation set up by the networks, has re-printed portions of Himmelweit's research. The above statement was interpreted by them as suggesting that since T.V. cannot really affect children one way, or the other, the children should be allowed to watch as much T.V. as they wanted. This is more completely covered by Arnold (2).

One of the worst examples of this misuse of research stems from Himmelweit's finding with violent programs, such as Westerns, Himmelweit claimed ". . . they tend to frighten only the very young or insecure; it is likely that the majority of children can enjoy them without fears by the time they are about seven." (2:143)

The amount of televised violence that has been justified by that tentative statement staggers the imagination. The true fact is that Himmelweit was not clear herself about letting children watch increasing amounts of violence.

Himmelweit said:

. . . the need for research (into violence on T.V.) is used too readily as an excuse. There is no need to prove such programs do harm. The strongest reason for criticizing them is their reiteration that life is cheap, and that conflict (in general) is to be solved by violence. (62:164)

The Schramm Study

The 1961 Schramm study, "Television in the Lives of Our Children," is the American counterpart of the Himmelweit study performed in England. Like American replications of English products it is much bigger; the scope of the study is far more vast, comprehensive, and far ranging in its effects.

Schramm and his associates performed eleven studies involving almost 6,000 students, and more than 1,900 parents. In addition several hundred teachers, administrators, and other officials were interviewed. The studies were conducted in ten different communities of the United States and Canada. These communities represented the variegated geographic, economic, cultural areas of the two countries and included areas such as: large, medium, and small cities, villages, rural areas, industrial areas, residential communities, and agricultural locations. In addition the study took the precaution of surveying several areas where television reception was non-existent to compare to the above locations.

Information was gathered, as in the Himmelweit study, from interviews, questionnaires, diaries; but unlike Himmelweit, Schramm used several tests to determine learning effects from watching T.V. All information was charted in the form of graphs.

One of the key points originating with Schramm was the keen desire the American community had for television. In one area surveyed by Schramm's teams there was no possibility of T.V. reception because of surrounding mountains. (This was before cable-television was perfected.) Once a year, however, atmospheric conditions were such as to allow a limited reception of a picture. Schramm found that every family in town had purchased a television set and kept it turned on every day, in the hopes of receiving a picture, because it was not possible to predict the one clear day of reception.

From this Schramm was able to point out how television had come to dominate the non-sleep, non-school time of the North American child. At that time, the late 1950's, Schramm discovered, from children age three and up, one-sixth of the child's waking hours were given over to the magic tube (106:23).

Schramm's findings were collated into a series of conclusions. Unfortunately, many of these conclusions were lifted and used by television producers to justify their

activities. As a scholar, though, Schramm was careful to stress the tentative nature of his conclusions, and to dwell on the need for more thorough research.

Schramm's (106) conclusions are summarized here:

1. For some children, under some conditions, some television is harmful. For other children under the same conditions it may be beneficial. For "most" children, under "most" conditions, "most" television is probably neither particularly harmful, nor particularly beneficial.

2. Television, as a new medium, has dramatically reorganized leisure time and mass-media use. It has cut deeply into movie going, radio listening, and reading, especially of comic books, pulp magazines, and newspapers. It reduces the amount of time for play. In general it dominates the child's leisure.

3. The average child spends on television, in his first sixteen years, as much time as he spends on school, and more time than he spends on all the rest of the media. During this time he is much more likely to watch adult programs than programs specifically for children. Children watch T.V. for entertainment, they have little or no taste for public affairs programs.

4. After entertainment children watch T.V. as an escape from reality. The third use of T.V. is as a means of information, and the fourth is for its use as a social

tool. Children feel that T.V. does its best job in the entertainment and fantasy levels.

5. Most of a child's learning from T.V. (Pre-Sesame Street) is an incidental increment from fantasy programs. Children who have T.V.'s in their homes start school with a vocabulary about a year higher than those who do not have T.V. The amount of this vocabulary gain is somewhat related to intelligence.

6. Children of high intelligence do less well on intelligence tests, and achievement tests, as their viewing time increases.

7. Television programs are noted, especially programs for children, for their repetitiveness, and a fairly low intellectual level. Much of the information imparted by television, such as the names of popular food items, popular singers or other personalities, etc. is not really related to the type of knowledge required in school.

8. The more conflict a child experiences, the more likely he is to watch T.V. than chose other activities to pursue.

9. Almost all children are, at some time or another, frightened by a T.V. program, but there are also some signs that the continual experiences of excitement generated by T.V. programs tends to dull the edge off actual experiences, or lead the children to demand of real

life something it cannot give them.

10. The dream of television as a super-medium, which would inform and teach and raise the cultural level of the world, has never been fully realized. Television has proved better at stimulating interest, than in stimulating intellectual or creative activity.

11. If a child has security, love, interests, friendship, and healthful activities in his non-television hours, there is little chance that anything bad is going to happen to him as a result of television.

12. Children learn to like the programs available to them, although ordinarily they would not even select those programs. Children have a natural desire to want to emulate T.V. heroes, even though the heroes may be criminals.

13. Children who are aggressive are more likely to remember aggression on television, but television can only be considered a contributory cause of juvenile delinquency. The charge that television harms otherwise undisturbed children must be considered not proved, rather than dis-proved.

14. In viewing television as a whole, the broadcasters (the networks) must assume the blame for the low intellectual level of television, as well as for the increasing amount of frightening material, and the exces-

sive amount of violence.

Schramm's point of view is often conflicting. His view that the child gets out of T.V. what he brings it, is in conflict with his view that T.V. leads not to human interaction, but rather toward withdrawal into private communion with the picture tube and the private life of fantasy (106:166). Part of T.V.'s influence in this is that the compelling nature of the T.V. medium pressures the child to use the medium to bridge that gap between activities that require initiative and effort for enjoyment, and the effortless feeling of enjoyment from watching T.V. The child will gradually refuse to work for his own enjoyment.

During the same year his book was published, Schramm was called to testify before the Senate Subcommittee on Juvenile Delinquency. As quoted by Arnold, Schramm said:

At the present time the view that children's watching of violence might act as a cathartic for their aggressive behaviors is not held because the last six good experiments, well controlled, scientific ones, have indicated it does not reduce it. Actually it has made more likely the fact that there will be some violent behavior by the persons who have seen it afterwards. (2:159)

The conflicts in Schramm's findings are clearly shown by his view of television as a ". . . great and shiny cafeteria from which children select what they want at the moment." Networks use that idea to justify

increased violence, because they are only presenting material, not forcing the children to watch it, and, as Schramm pointed out, only children who are troubled react negatively toward life after watching T.V.

But Schramm himself was not so sure. His final pages warn parents about the dangers of using the television as an electronic babysitter, because they are robbing their children of the very experiences which would mitigate the evil effects of watching too much of the wrong type of program. Schramm also felt there has been far too little research into the medium, especially of the long-term, longitudinal study of a selected group.

Schramm also made the barest suggestion that television might depress creative activities. He quoted (2: 136) from the work of Lazarsfield and Merton, who felt that since the media had great sums invested, and wished to make a profit, the media must be as conservative as any typical big business. Their business is meeting a tremendous demand for entertainment, which they solve by being repetitive. That is, a program that succeeds is duplicated, shown on re-runs, and develops competing programs that are exactly the same. Networks are deathly afraid of alienating the mass of their audiences, and so are limited to small changes, but not fundamental ones. Thus, like any powerful, imposing, conservative institution, the effects

generated by television are likely to be long, slow effects on values, awareness, on response patterns, and on cultural and individual behavior. These effects will be very hard to identify with short-term research because they take years to make a significant contribution.

Creative activities, since they involve a willingness to be original, to respond in a divergent manner, to create new from old, are likely to be depressed by these conservative influences of television, especially if the influences are cumulative and stretched out over a number of years.

The Surgeon General's Report

Recently, the Department of Health, Education and Welfare requested the Surgeon General to study the relationship between television and violence. The HEW Department was disturbed at the rapid spread of violence in the country, especially at the violence-filled reports about the aggressive activities in this country. HEW wanted to know if there was more than a casual relationship between viewing such scenes as riots, warfare, destruction, beatings, etc. and the desire to use violence as a means for solving conflict, even before other means had been exhausted.

The report took five volumes to complete. The unmistakable conclusion was that viewing violence on television was hazardous to the mental, as well as physical,

health of Americans, especially children. The report establishes as fact the conception that viewing aggression and violence on television can, and does, lead to acceptance of a more violent life-style for the viewers.

The research which forms a broad, scientific inquiry into television and its impact on the viewer was begun in the spring of 1969 (24:2). More than 50 scientists were asked to participate directly in this program and they produced more than 40 scientific papers. The research papers were reviewed, analyzed, and evaluated by a science advisory committee of the Department of Health, Education and Welfare.

Since the committee was able to draw on so many notable scholars, it is not surprising to see the many styles of research presented in the volumes. Several researchers were able to enlarge earlier field surveys, and others were able to extend longitudinal studies, or increase their samplings until they contained really representative populations (N's of several thousand).

Volume V makes the conclusion that there is a significant positive correlation between viewing violent television programs and aggressive behavior in adolescents. What is even more important is that the study finds no negative correlational evidence. The correlation between viewing and violence stands up consistently in varying

samples whether they are analyzed for the variable of sex, age level, or geographic location, and the measure persists with a variety of measures of aggressiveness. The findings remain in the face of any attempt to partial out causes through intervening variables, and longitudinal studies continue to bear out the correlation.

The practical results of this massive study have been ludicrous in the face of the findings. Nothing at all has been done. The editors have suggested that television adopt a rating code, similar to the movies, but enforcement of this in the local home is impossible. They have also suggested that the F.C.C. refuse to renew licenses of stations which broadcast an abundance of violent programs, but the F.C.C. is controlled by political appointment, and politicians are aware of how important television is to campaigning for votes.

Summation

Godwin C. Chu and Wilbur Schramm have compiled a monograph called: Learning from Television: What the Research Says. This book is a compilation of research reports on television. The book is very useful in instructional technology because it deals with educational television solely. It is representative of most of the current research activities in this field. Chu and Schramm dealt with such categories as: (1) amount of pupil learning from

televised instruction, (2) comparison of learning from televised to live teacher (conventional education), (3) how to establish efficient instructional television techniques, (4) effect of viewing conditions, angles, size of screen, group, classroom, motivational problems, feedback, (5) administrative problems, (6) cost considerations, etc.

The conclusion of the authors was that:

There is no longer any doubt that children and adults learn a great amount from instructional television. The effectiveness of television has now been demonstrated in well over 100 experiments and several hundred comparisons, performed in many parts of the world, in developing as well as industrialized countries, at every level from preschool through adult education, and with a great variety of subject matter and method. (23:3)

The failure of the report comes from its refusal to deal with commercial television; the programs children actually watch. Schramm and Chu stated that a great deal of learning undoubtedly occurred from non-instructional television, but they felt non-instructional television needed another approach.

Another failure of the report is similar to the work of Guilford and others in criticizing conventional intelligence tests. Both Schramm and Chu's study, and conventional intelligence tests, leave out creative factors.

There has been very, very little work in the field

of television and creative intelligence. Beittel (15) performed a study which used television to provide a delayed feedback to a group of art students in an attempt to improve their performance. T.V. cameras taped the student's work at various intervals in its development and the experimenters had the student comment on his work at these times. The study suggested some possibilities for improvement in a creative field through use of television, but as the author pointed out, only the poorer students improved their work by this method.

Thomas Banks (9) wrote a dissertation showing that people from a socially poor background could improve their self-image if allowed to view television programs where people from a similar social background are portrayed as positive figures.

This has been the sum of research on television. There are several reasons that could be given for the lack of significant research in this important field. The most important of these is the few years that have passed since the introduction of modern T.V., the rigorous techniques demanded by scientific experimentation with its need for precise control, objectivity, and need for replication, and the costs such procedures would require.

Thus, the modern world is presented with research that hardly applies to television practices of twenty years

ago. Modern television does not stand still waiting for researchers to show where it is heading. The thrust of the most recent research has been with the standard television broadcast, but modern T.V. has already moved into cable units with 70 or more channels available, portable T.V. systems, sophisticated home T.V. systems including the possibilities of taping and editing and re-broadcasting, international broadcasting, closed circuit systems, and so on.

Similarly, in education the thrust of modern research in creativity has shown that convergent intelligence profiles do not tell the entire picture. Yamamoto, Cropley, Torrance and many others have performed studies which show that creative potential is at least as important in educational achievement as is the student's intelligence quotient. Yet, when money becomes scarce, educational bureaucracies, as in Los Angeles, immediately cut back on those whose job is to promote creativity.

Combining the lack of research into commercial television with the recently suggested importance of creative potential, raises some interesting educational questions. Most important of these is the question of whether commercial television has an effect on the viewer's creative potential. Secondary considerations deal with type of affect (positive or negative), the personal-

ity who is affected (sex, age, IQ, etc.), and the differing effects produced by the different types of programs available on commercial stations.

It is the purpose of this study to throw some light in the dark tunnel of television's effect on creative potential.

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CHAPTER III

TECHNIQUES AND PROCEDURES

The Test Battery

Guilford and Merrifield (55) have developed a model, "The Structure of the Intellect," that may be employed to study intellectual processes. By factor analysis, intellectual processes are divided into five categories: Cognition, Memory, Convergent Production, Divergent Production, and Evaluation. The resulting products stem from the different materials of thought, the contents, which are known as figural, semantic, symbolic, and behavioral. The products themselves may be: units, classes, relations, systems, transformations, or implications. Guilford has never regarded the model and the placement of factors within it to be permanently fixed. (See Figure 1)

The creative personality is determined by his divergent thinking abilities. This divergent thinking involves searching out alternatives, changing direction, expanding activities. It is the direct opposite of the converging thought processes which seek out one correct,

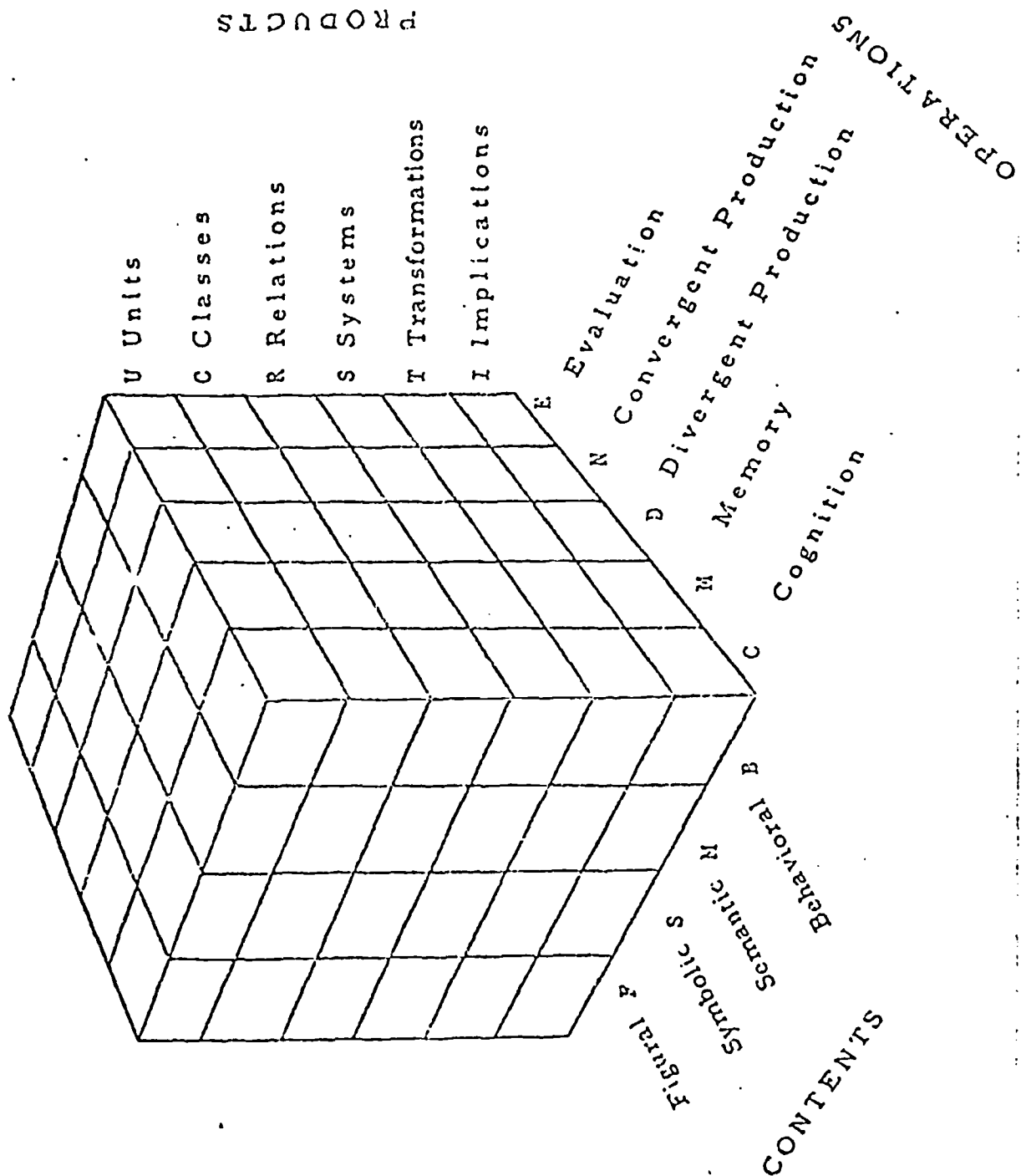


Fig. 1 -- The Structure of the Intellect

situationally defined, answer. The traits of creativity have been defined by Guilford and his associates as: word, expressional, associational, and ideational fluency; figural spontaneous flexibility, semantic spontaneous flexibility, and figural adaptive flexibility; originality, sensitivity to problems; elaboration, and redefinition.

For each of these traits Guilford and Merrifield have developed at least two, and often three, tests; but the most important areas are those dealing with fluency, flexibility, and originality.

Fluency. This area is further divided into ideational fluency, associational fluency, and expressional fluency. The first term refers to the production of a number of ideas, the second refers to ideas which are related to the stimulus as specified in the problem situation, and the third refers to the organizing of ideas into systems.

Flexibility. This refers to a change in the meaning, interpretation, or use of something. It might relate to a new understanding of the problem, a new strategy of attack, or an ability to change a goal (46:382).

Originality. This is the capacity to produce unusual remote or clever responses. The great problem is that the scoring of these responses is very difficult, especially in the cases of significantly remote responses.

The tests selected in this experiment have been grouped into several categories. The first is verbal, then figural, and mathematical. Some tests score responses in two ways. The first score is for number of responses, and the second score is for the originality (also known as "remoteness") of the answer. These "remote" scores have been compiled into a fourth category known simply as creative response score. All the scores are tabulated together to form a battery score.

Description of the Tests

Verbal Tests

"Word Fluency." This tests the ability to produce rapidly a list of words each of which satisfies the specified requirement that it contain specified letters.

"Associational Fluency." This tests the ability to produce rapidly words which bear some specified, meaningful relation to a given word.

"Consequences." This tests the ability to produce remote associated, clever, or uncommon responses, which are generated when the subject is presented with a problem situation and asked: "What would happen next. . . ?" Scores for this test yield information about ideational fluency as well as originality.

Figural Tests

"Decorations." This tests the ability to design figural units which bear some relationship to a given form. It is the visual counterpart of the "Word Fluency" test.

"Sketches." This tests the ability the subject has to retrieve from his memory store a number of commonly known objects that satisfy a specific requirement. In this test the requirement is that the objects fit within or around the given stimulus, which range from circles, triangles and squares, to parallel lines and free forms. The score received is the visual equivalent of the verbal ability known as ideational fluency.

Mathematical Tests

"Rules." This tests the ability to discover a set of numbers which bear some logical relationship to a given set of numbers. Scoring is for number of answers and remoteness of responses.

"Problems." This tests the ability to generate a set of circumstances which if completed would result in the given stimulus. The given stimulus is a mathematical one such as: Zero, Five Hundred, or Four Triangles. Scoring is again for number of responses and remoteness of response.

Test Reliability

Establishing reliability for tests of creative thinking is a more difficult procedure than establishing reliability for conventional intelligence tests. For one, the scoring of creativity tests is always somewhat subjective, and for another, the creative personality is not known for its stability of performance. Creative levels vary often in the same individual. For experimental purposes the reliability of tests of creative thinking is high enough to be used, even though the reliabilities are lower than those considered acceptable for tests of convergent abilities, used for studying individual students. As tests of group performance the relatively lower reliabilities of the creativity tests are more tolerable.

Description of the Subjects and Location of the Study

The problem which initiated this study was that growing ecological problems, rising violence, and increasingly dangerous military adventures demand, if the world is to survive, a willingness to foster creative solutions to solve these crises. One would logically expect that the world's leaders, or those who are most likely to be the world's leaders, would be trained or educated in a fashion which would allow the maximum development of their creative talents.

Who are most likely to be the world's leaders?

In this country Terman (121) performed a lengthy study on children of superior intelligence. Terman reported 182 families which contributed two or more children who qualified for his research as having IQ's in the top one per cent. This is more than 1,200 times the number that pure chance would give (121:110). In addition, Terman pointed to the superior attainment of many of the parents themselves as indicated by inclusion in "Who's Who," holding important national offices and positions in colleges and industry, or having attained eminence in the arts.

Research on the occupational background of parents of the intellectually gifted tend to relate high occupational status to the rearing of gifted offspring. Terman classified the fathers' occupations as follows:

Professional	31.4 per cent
Semi-professional	50 per cent
Skilled work	11.8 per cent
Semi- and Unskilled work	6.8 per cent

Hollingworth (65) corroborated this listing with findings reported in Wisconsin, New York, and England. Other researchers who reported similar findings were: Bowman (18), Goldberg (41), Holland and Stalnaker (63).

Terman's (122, 123) study followed his gifted children into later life. As might be expected he found

that the intellectually gifted not only entered vital professions and managerial occupations but tended to rise and achieve well in their chosen professions. The general occupational distribution followed by his subjects is listed below.

<u>Occupation</u>	<u>Per Cent</u>
Professional	45.6
Managerial	40.7
Skilled work	10.9
Semi-skilled, Unskilled	2.8

A dissertation by Tibbets (124:128) also determined that IQ was a very significant variable in performance on creativity tests, especially when combined with the race of the subject. Thus, segregating a population by race, occupation and IQ means a group is segregated that is going to produce a significant number of future leaders in society.

A school population composed of a homogenous population whose members came from positions of leadership in their chosen fields, and which possessed a relatively high number of identified intellectually gifted students, was found. The occupations of the parents in this area were those listed as belonging to high status roles. This included such choices as doctors, lawyers, engineers, scientists, managers of large business, business execu-

tives, and professional artists. The homes of the children in the study were most usually single-family, privately-owned residences in the \$25,000 and up category.

The schools chosen in the study were situated in a suburb of a large metropolitan community. The suburb is described as pleasant, attractive, fairly expensive bedroom community. Home life is fairly stable, and there is a good deal of interest in school matters by the local community, as evidenced by attendance at PTA and other school-family functions. Many families reported moving into the area because the schools were supposed to be excellent. The schools present an attractive appearance, with lots of surrounding green space, large play areas, and comfortable classrooms. The school personnel reflected a similar interest and pride in their schools. Work in the classroom seemed to be interesting, complex, and of genuine interest to the students.

Each school selected had a significantly large population of intellectually gifted children. The school district provided a substantial interest and support of their gifted programs. Children in the gifted program at the chosen schools had their own teachers, classrooms, and equipment. The work of the class exhibited the benefit of these enriched activities and the competence of the teachers.

Procedures and Design

The researcher contacted each parent of the 250 children selected for the study and attempted to solicit their interest and support. Several letters were sent and the parents responded with interest. Only three families reported negatively and their children did not take part in the study. Table 1 indicates the number of subjects by grade, sex, and category.

With the help of the parents, the students, and their cooperating siblings a base-rate of viewing time was obtained. The students, who came from the fourth, fifth, and sixth grades were then randomly divided into six categories. Several students from each class were chosen to become the control group.

Each category referred to a type of T.V. program. Category One was called educational T.V. Category Two referred to sports programs. Category Three was composed of cartoons, or animated programs. Category Four was composed of comedy programs, Category Five of dramatic shows, including movies, and Category Six was called "Everything" because selection of programs was left to the subject.

The categories, and the programs which a student who had been selected to a specific category could watch were discussed at some length. The amount of time the

TABLE 1

SUMMARY OF NUMBERS OF SUBJECTS BY
GRADE, SEX, AND CATEGORY

Grade	Sex	Categories Pre-Test							Categories Post-Test						
		1	2	3	4	5	6	All	1	2	3	4	5	6	All
4th	Male	8	9	8	5	7	10	= 47	4	8	7	5	6	10	= 40
	Female	7	3	3	8	9	11	= 46	7	3	5	8	6	10	= 39
	Totals	15	12	16	13	16	21	= 93	11	11	12	13	12	20	= 79
5th	Male	6	7	5	5	4	6	= 33	4	7	3	5	4	4	= 27
	Female	8	7	9	6	8	7	= 45	8	7	5	6	6	5	= 37
	Totals	14	14	14	11	12	13	= 78	12	14	8	11	10	9	= 64
6th	Male	6	9	6	8	6	7	= 42	4	4	6	7	5	5	= 31
	Female	4	2	5	6	9	9	= 35	2	2	3	3	7	9	= 26
	Totals	10	11	11	14	15	16	= 77	6	6	9	10	12	14	= 57
<u>Grand Totals</u>															
	Male	20	25	19	18	17	23	=122	12	19	16	17	15	19	= 98
	Female	19	12	22	20	26	27	=126	17	12	13	17	19	24	=102
	Totals	39	37	41	38	43	50	=248	29	31	29	34	34	43	=200
<u>Control Group</u> (Same numbers for pre-test and post-test.)															
4th	Male	5							5th	Male	3	6th	Male	4	=12
	Female	5								Female	7		Female	3	=15
	Totals	10								10					

students reported they actually spent watching T.V. was discussed with them, and each student was encouraged to increase this amount. Each student was given a journal in which he would record the name of the programs he watched, the amount of time he spent watching, the date, and the channel the program was on.

The importance and purpose of the study was discussed with the students and their teachers, and the necessity to watch only the programs in the assigned category. The teachers were interested in the experiment and cooperated by collecting the journal records, and encouraging the students.

Each student was then given the battery of creativity tests described earlier. The classes were visited once more to collect the journal reports and to encourage the students. At the end of the third week each student, and the control group, were given another battery of creativity tests (the Posttests).

The Experiment Design

The form of the experiment is the same as that detailed as: The Pretest-Posttest Control Group Design, by Campbell and Stanley (22). This form was selected because it allowed control for internal validity. The use of the control group mitigated the factors of history, maturation, the effects of testing, statistical regression,

and other interaction effects.

The control group, though present in the room while the experiment was discussed, were encouraged to continue watching whatever programs they usually watched. Students who could not watch an exclusive set of programs due to family considerations or personal inclinations were placed into the control group.

Scoring the Creativity Battery:

The scores were combined into categories. The first three word tests form the verbal category. The second tests, "Consequences" forms its own category since it tests responses which are different in nature from those on the verbal tests. The scores from this test are in two parts. The first is a fluency score, and represents, simply, the number of responses. The second score is called a "remote" score because it assesses a shift in thinking. This score is attached to the creative category.

There are five tests in the figural area. Each test is scored both for fluency, or number of responses, and for "remoteness" of the response. For example a subject can earn a point in the "remote" category if he combines two symbols in constructing a sketch, or if his work digresses from the information given and includes new material, or represents another use of given forms. These remote scores help form the total score of the creativity

category.

The last tests are those which form the mathematical category, because they involve the use of numbers or represent some aspect of numerical thinking. Certain responses in this test can be scored in the "remote" category.

Finally, the categories Verbal, Consequences, Figural, Mathematical, and Creative are combined into a total battery score.

The researcher read and scored all the tests of all the subjects. The purpose of so doing was to remove testing bias as much as possible. Scores in the remote category are subjective in nature because they represent a guess at intent. However, three other scorers were given a large sample of tests to score to discover discrepancies in scoring patterns. The three scorers were: an elementary school principal who had an Ed.D. Degree in Educational Psychology and had professional training in test construction and scoring; a graduate student in Educational Psychology who worked at a State Hospital; and a School Psychologist from the Los Angeles Unified School District.

The discrepancies in scoring were remarkably few. Fluency scores agreed because it represented an objective fact - the number of responses. Remote scores agreed to a

large extent because each scorer had experience with creativity tests. The random sampling of compared scores achieved a product moment correlation of .92, which is far above the level needed for accuracy.

Selection of Statistical Techniques

The main statistical procedure selected was a three-way analysis of variance and covariance technique, where the three independent variables were sex, grade, and category of program watched, and the dependent variable was the change of scores on the pretest to posttest. This procedure permits the correlation of data within the structure of one design, whereby groups can be compared statistically.

All scores were transferred to Data Punch cards and run through an IBM 3090 Computer programed to conduct analysis of variance techniques.

Additionally, the Analysis of Variance was conducted where the group scores were computed from individual cell scores. Each cell is then considered to have an "N" of 1. This is sometimes called an "Unweighted Means Analysis." This concept is discussed in the literature. Kirk (72) dealt with this problem in his work: Experimental Design in the Behavioral Sciences. The unweighted means analysis is often used when subjects in the experiment fail to finish parts of the experiment due to illness,

equipment failure, reluctance, etc. In the present experiment a number of students decided to leave the experiment because they were reluctant to abide by test restrictions, several students were sick for the posttest, and others were called from the room during the day of testing and were unavailable. This produced unequal cells requiring an unweighted means analysis of variance.

The use of such a technique produces a more conservative result because the degrees of freedom section is considerably reduced. Generally, conservative techniques mean the research will be more susceptible to Type II (Beta) errors than to Type I (Alpha) errors. Type I errors refers to the rejection of the null hypothesis when it is actually true, and Type II refers to acceptance of the null hypothesis when it is actually false.

Type I errors can be minimized by the simple expedient of rejecting the null hypothesis only when the difference is so fantastically great that the occurrence borders on the impossible, rather than the relatively improbable. Type II errors can be minimized by rejecting the null hypothesis at larger percentages of the normal probability curve: the ten per cent level rather than the customary five and one per cent.

Guilford described several less conservative tests which could be used when dealing with unweighted means.

This includes the "Sign-Rank Test, the Wilcoxon T, and the Mann Whitney U." These tests deal with the change from pretest to posttest. They do not deal with individual change, but rather indicate, like the binomial, the probability the number of changes in a given direction is significant. Naturally, these less conservative techniques tend to produce Type I errors. Mouly related the difficulties of determining confidence levels in problems similar to the research of this experiment (91:169).

Statement of Hypotheses

1. There is no significant difference on demonstrated creative performance that originates from watching an increased amount of television programs during a three week period.

2. There is no significant difference on demonstrated creative performance that originates from watching any particular category of T.V. programs.

3. There is no significant effect on any of the following abilities: verbal, consequential, figural, mathematical, or creative (remote), from watching an increased amount of T.V. programs.

4. There is no significant effect on any of the following abilities: verbal, consequential, figural, mathematical, or creative (remote) from watching a particular category of T.V. programs.

5. There is no significant difference in demonstrated creative abilities of females from watching increased amounts of T.V. programs.

6. There is no significant difference in demonstrated creative abilities of females from watching a particular type of T.V. program.

7. There is no significant difference in demonstrated creative abilities of males from watching increased amounts of T.V. programs.

8. There is no significant difference in demonstrated creative abilities of males from watching a particular type of T.V. program.

9. There is no significant difference in demonstrated creative abilities of a particular grade from watching an increased amount of T.V. programs.

10. There is no significant difference in demonstrated creative abilities of a particular grade from watching a particular type of T.V. program.

CHAPTER IV

RESULTS OF THE STUDY

Introduction

As described in the last chapter conservative statistical techniques were used and all individual scores were compiled into group mean scores. Table 2 describes the performance on pretests and posttests by the control group. Most conspicuous is the fact that performance on the posttest exceeded performance on the pretest to a slight degree, and this was more true for males than for females. There was also a greater change for younger children than for the older ones.

Campbell and Stanley (22:9) discussed the causes for such changes as stemming from the effect of testing. They wrote that students taking tests for the second time, or alternate forms of the same test, usually did better than those taking the test for the first time. The important point is that scores on tests generally increase, if the subject is being tested twice, and this is verified according to Campbell and Stanley by Anastasi, 1958, and Cane & Heim, 1950.

Description of Tables

Table 2 describes the performance of the control group on both the pretest and posttest. The scores are recorded as individual category scores and as total scores. Each score is recorded as either a positive or negative change. A score of -3.0 means that the group in that cell had decreased its mean score on the posttest, as compared to its score on the pretest. A positive number means the score was increased by the amount indicated.

Standard Deviations are drawn from the Test Scoring Booklets and allow significance to be attached to the amount of change. The percentage of positive and negative changes is also given.

Table 3 describes the same facts for the experimental group.

Table 4 describes the changes of the experimental group as related to the category of program that group watched. Changes are again described in terms of increases (positive numbers) or decreases (negative numbers) of total mean scores. Scores are arranged in terms of grade and sex.

Table 5 describes the changes in total scores by category of all the students in the experiment. It allows dramatic demonstration of the categories which produced the greatest overall effect.

Table 6 describes the changes in total mean scores by grade of students. This table shows which category had the greatest effect upon a single grade.

Tables 7-19 describe the summation of scores of each part of the creativity tests, and detail the analysis of variance for each part.

Table 20 describes the changes in viewing time during the experiment.

Table 21 describes the changed ranking of the categories as determined by scores on pretests and post-tests. In addition it details the changed ranking of the categories for males, females, and total scores. A score of -2 for males in Category 2 Sports means that those students in this cell scored two ranks lower after watching sports programs on T.V. A positive score means the relative ranking increased. The scores are indicated from low to high score.

TABLE 2
SUMMARY OF CHANGES IN PERFORMANCE OF CONTROL GROUP
PRETEST TO POSTTEST, BY MEAN SCORES

Grade	Sex	Verbal	Conse- quences	Figural	Mathe- matical	Creative	Total
4th	Male	+3.0	+0.4	+5.4	-7.0	-1.0	+2.4
	Female	+1.5	+0.5	+1.6	+2.8	+0.1	+5.1
	Totals	+4.5	+0.9	+7.0	-4.2	-0.9	+7.5
	Mean of Means	+2.25	+0.45	+3.5	-2.1	-0.45	+3.75
5th	Male	+10.5	+2.5	-3.0	-8.5	+1.0	+3.5
	Female	-2.4	-1.4	-1.3	+2.0	+2.0	-1.1
	Totals	+8.1	+1.1	-4.3	-6.5	+3.0	+2.4
	Mean of Means	+4.05	+0.55	-2.15	-3.25	+1.5	+1.2
6th	Male	+6.7	+1.7	-0.3	+1.0	-0.3	+8.8
	Female	+5.0	-0.5	-1.0	-5.0	-3.0	-5.5
	Totals	+11.7	+1.2	-1.3	-4.0	-3.3	+3.3
	Mean of Means	+5.85	+0.6	-0.65	-2.0	-1.65	+1.65

TABLE 2--Continued

Grade	Sex	Verbal	Conse- quences	Figural	Mathe- matical	Creative	Total
<u>Grand Totals - All Grades</u>							
	Male	+6.8	+1.9	+3.3	-4.8	-0.1	+3.6
	Female	+1.3	-0.5	-0.7	+0.0	-0.3	-0.5
<u>Totals</u>							
		+8.1	+1.4	+2.6	-4.8	-0.4	+3.1
<u>Mean of Means</u>							
		+4.05	+0.7	+1.3	-2.4	-0.2	+1.55
<u>Standard Deviations (from Test Administration Booklets)</u>							
		8.2	8.6	5.0	4.4	3.7	5.9
Number of possible changes = 72		Number of positive changes = 46 (66%)					
		Number of negative changes = 26 (33%)					

TABLE 3

SUMMARY OF CHANGES IN PERFORMANCE OF EXPERIMENTAL GROUP
PRETEST TO POSTTEST, BY MEAN SCORES

Grade	Sex	Verbal	Conse- quences	Figural	Mathe- matical	Creative	Total
4th	Male	+3.9	-1.5	-3.8	+1.1	-0.9	-1.5
	Female	+3.3	+0.4	-5.0	-0.8	+0.4	-2.1
	Totals	+7.2	-1.1	-8.8	+0.3	-0.5	-3.6
	Mean of Means	+3.60	-0.55	-4.4	+0.15	-0.25	-1.8
5th	Male	+3.0	-0.9	-4.9	-1.5	-1.6	-6.6
	Female	+1.0	-2.9	-5.0	-1.3	-0.9	-9.1
	Totals	+4.0	-3.8	-9.9	-2.8	-2.5	-15.7
	Mean of Means	+2.00	-1.90	-4.95	-1.40	-1.25	-7.85
6th	Male	+3.6	-1.9	-0.9	-0.7	-0.9	-1.0
	Female	+5.6	-0.9	-3.6	+2.0	+0.1	+3.3
	Totals	+9.2	-2.8	-4.5	-1.3	-0.8	+2.3
	Mean of Means	+4.60	-1.40	-2.75	-0.65	-0.4	+1.25

TABLE 3--Continued

Grade	Sex	Verbal	Conse- quences	Figural	Mathe- matical	Creative	Total
<u>Grand Totals - All Grades</u>							
	Male	+3.5	-1.4	-3.2	-0.4	-1.1	-2.7
	Female	+3.3	-1.2	-4.9	-0.0	-0.1	-2.6
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	Totals	+6.8	-2.6	-8.1	-0.4	-1.2	-5.3
	Mean of Means	+3.40	-1.30	-4.55	-0.20	-0.60	-2.65
<hr/>							
Number of possible changes = 72			Number of positive changes = 19 (26%)				
			Number of negative changes = 53 (73%)				

TABLE 4

SUMMARY OF CATEGORICAL CHANGES BY MEAN SCORES

	Grade	Sex	Mean Scores
Category 1 (Educational T.V.)			
	4th	Males	+ 6.100
		Females	- 9.900
		Total Change	- 3.800
	5th	Males	- 4.100
		Females	+ 1.700
		Total Change	- 2.400
	6th	Males	-13.900
		Females	+ 7.900
		Total Change	- 6.000
Grand Summation - Category 1		Males	-11.900
		Females	- 0.300
		Total Change	-12.200
Category 2 (Sports)			
	4th	Males	- 3.600
		Females	- 0.700
		Total Change	- 4.300
	5th	Males	+ 1.800
		Females	- 0.300
		Total Change	+ 1.500
	6th	Males	+ 2.100
		Females	- 8.000
		Total Change	- 5.900
Grand Summation - Category 2		Males	+ 0.300
		Females	- 9.000
		Total Change	- 8.700

TABLE 4--Continued

	Grade	Sex	Mean Scores
Category 3 (Cartoons)	4th	Males	- 9.900
		Females	- 3.700
		Total Change	-13.600
	5th	Males	- 4.400
		Females	- 1.600
		Total Change	- 6.000
	6th	Males	-15.200
		Females	- 1.100
		Total Change	-16.300
Grand Summation - Category 3		Males	-29.500
		Females	- 6.100
		Total Change	-35.600
Category 4 (Comedy)	4th	Males	- 8.300
		Females	- 7.600
		Total Change	-15.900
	5th	Males	- 2.000
		Females	- 8.000
		Total Change	-10.000
	6th	Males	-13.300
		Females	- 1.100
		Total Change	-14.400
Grand Summation - Category 4		Males	-23.600
		Females	-16.700
		Total Change	-40.300

TABLE 4--Continued

	Grade	Sex	Mean Scores
Category 5 (Drama)	4th	Males	+ 4.800
		Females	- 4.700
	Total Change		+ 0.100
	5th	Males	-10.400
		Females	- 0.200
	Total Change		-10.600
	6th	Males	+ 6.500
		Females	+ 5.800
	Total Change		+12.300
Grand Summation - Category 5		Males	+ 1.300
		Females	+ 0.900
	Total Change		+ 2.200
Category 6 (Everything)	4th	Males	- 0.400
		Females	-17.500
	Total Change		-17.900
	5th	Males	+ 2.400
		Females	- 1.500
	Total Change		+ 0.900
	6th	Males	+ 6.300
		Females	- 5.900
	Total Change		+ 0.400
Grand Summation - Category 6		Males	+ 8.300
		Females	-24.900
	Total Change		-16.600

TABLE 5

SUMMARY OF CATEGORICAL CHANGES BY
TOTAL SCORES (ALL GRADES)

Category	Males +	Females =	Total Change	Type of Program
1	-11.900	- 0.300	-12.200	Educational T.V.
2	+ 0.300	- 9.000	- 8.700	Sports
3	-29.500	- 6.100	-35.600	Cartoons
4	-23.600	-16.700	-40.300	Comedy
5	+ 1.300	+ 0.900	+ 2.200	Drama
6	+ 8.300	-24.900	-16.600	Everything
Totals	-55.100	-56.100	-111.200	
Mean Totals	- 9.18	- 9.35	-18.53	

TABLE 6

SUMMARY OF CATEGORICAL CHANGES BY GRADE MEAN SCORES

Grade	Category Type	Males	+ Females	= Total
4th	1-(Educational T.V.)	+ 6.100	- 9.900	- 3.800
	2-(Sports)	- 3.600	- 0.700	- 4.300
	3-(Cartoons)	- 9.900	- 3.700	-13.600
	4-(Comedy)	- 8.300	- 7.600	-15.900
	5-(Drama)	+ 4.800	- 4.700	+ 0.100
	6-(Everything)	- 0.400	-17.500	-17.900
	Totals	-11.300	-44.100	-55.400
	Mean of Means	- 1.88	- 7.35	- 9.23
5th	1-(Educational T.V.)	- 4.100	+ 1.700	- 2.400
	2-(Sports)	+ 1.800	- 0.300	+ 1.500
	3-(Cartoons)	- 4.400	- 1.600	- 6.000
	4-(Comedy)	- 2.000	- 8.000	-10.000
	5-(Drama)	-10.400	- 0.200	-10.600
	6-(Everything)	+ 2.400	- 1.500	+ 0.900
	Totals	-16.700	- 9.900	-26.600
	Mean of Means	- 2.78	- 1.65	- 4.43
6th	1-(Educational T.V.)	-13.900	+ 7.900	- 6.000
	2-(Sports)	+ 2.100	- 8.000	- 5.900
	3-(Cartoons)	-15.200	- 1.100	-16.300
	4-(Comedy)	-13.300	- 1.100	-14.400
	5-(Drama)	+ 6.500	+ 5.800	+12.300
	6-(Everything)	+ 6.300	- 5.900	+ 0.400
	Totals	-27.500	- 2.400	-29.900
	Mean of Means	- 4.58	- 0.40	- 4.98

TABLE 7
SUMMARY OF MEAN SCORES-VERBAL TESTS
PRETEST TO POSTTEST

Variables	Change of Means
1-Experimental	+ 3.400
2-Control	+ 4.050
3-Sex a) Male	+ 4.200
b) Female	+ 3.250
4-Grade a) 4th Grade	+ 1.375
b) 5th Grade	+ 3.775
c) 6th Grade	+ 6.025

TABLE 8
ANALYSIS OF VARIANCE SUMMARY TABLE
VERBAL TESTS

Source of Variation	Degrees of Freedom	Sums of Squares	Mean Squares	F
A-Experimental-Control	1	1.267	1.267	.119
B-Sex	1	2.707	2.707	.2547
C-Grades (4th, 5th, 6th)	2	43.259	21.629	2.03
A + B	1	2.707	2.707	.2547
A + C	2	15.680	7.840	.737
B + C	2	24.180	12.090	1.13
Residual	2	21.259	10.630	

TABLE 9
SUMMARY OF MEAN SCORES-CONSEQUENCES TEST
PRETEST TO POSTTEST

Variables	Change of Means
1-Experimental	- 1.283
2-Control	+ 0.700
3-Sex a) Males	+ 0.400
b) Females	- 0.983
4-Grade a) 4th Grade	- 1.350
b) 5th Grade	+ 0.175
c) 6th Grade	+ 0.300

TABLE 10
ANALYSIS OF VARIANCE SUMMARY TABLE
CONSEQUENCES TEST

Source of Variation	Degrees of Freedom	Sums of Squares	Mean Squares	F
A-Experimental-Control	1	11.800	11.800	3.35
B-Sex	1	5.740	5.740	1.63
C-Grades (4th, 5th, 6th)	2	6.751	3.375	.95
A + B	1	0.067	0.067	.019
A + C	2	0.271	0.135	.03
B + C	2	1.121	0.560	.179
Residual	2	7.034	3.517	

TABLE 11
SUMMARY OF MEAN SCORES-FIGURAL TESTS
PRETEST TO POSTTEST

Variables	Change of Means
1-Experimental	- 3.866
2-Control	- 0.016
3-Sex a) Male	- 1.866
b) Female	- 2.016
4-Grade a) 4th Grade	- 1.175
b) 5th Grade	- 1.525
c) 6th Grade	- 3.125

TABLE 12
ANALYSIS OF VARIANCE SUMMARY TABLE
FIGURAL

Source of Variation	Degrees of Freedom	Sums of Squares	Mean Squares	F
A-Experimental-Control	1	44.467	44.467	16.05
B-Sex	1	0.067	0.067	.024
C-Grades (4th, 5th, 6th)	2	8.646	4.323	1.56
A + B	1	7.207	7.207	2.60
A + C	2	10.320	5.160	1.86
B + C	2	21.679	10.840	3.91
Residual	2	5.539	2.769	

TABLE 13
SUMMARY OF MEAN SCORES-MATH TESTS
PRETEST TO POSTTEST

Variables	Change of Means
1-Experimental	- 0.200
2-Control	- 2.466
3-Sex a) Male	- 2.333
b) Female	- 0.333
4-Grade a) 4th Grade	- 1.325
b) 5th Grade	+ 0.575
c) 6th Grade	- 3.250

TABLE 14
ANALYSIS OF VARIANCE SUMMARY TABLE
MATH TESTS

Source of Variation	Degrees of Freedom	Sums of Squares	Mean Squares	F
A-Experimental-Control	1	15.413	15.413	1.17
B-Sex	1	12.000	12.000	.913
C-Grades (4th, 5th, 6th)	2	29.261	14.630	1.11
A + B	1	7.680	7.680	.584
A + C	2	46.611	23.305	1.77
B + C	2	12.195	6.097	.46
Residual	2	26.285	13.142	

TABLE 15
SUMMARY OF MEAN SCORES-CREATIVE (FLEXIBILITY) SCORES
PRETEST TO POSTTEST

Variables	Change of Means
1-Experimental	- 0.633
2-Control	- 0.200
3-Sex a) Male	- 0.333
b) Female	- 0.500
4-Grade a) 4th Grade	- 0.200
b) 5th Grade	- 0.175
c) 6th Grade	- 0.875

TABLE 16
ANALYSIS OF VARIANCE SUMMARY TABLE
CREATIVE (FLEXIBILITY) SCORES

Source of Variation	Degrees of Freedom	Sums of Squares	Mean Squares	F
A-Experimental-Control	1	0.563	0.563	.109
B-Sex	1	0.083	0.083	.016
C-Grades (4th, 5th, 6th)	2	1.261	0.630	.122
A + B	1	0.270	0.270	.052
A + C	2	1.481	0.740	.143
B + C	2	4.211	2.105	.407
Residual	2	10.304	5.152	

TABLE 17
SUMMARY OF MEAN SCORES-TOTAL BATTERY SCORES
PRETEST TO POSTTEST

Variables	Change of Means
1-Experimental	- 2.833
2-Control	+ 1.433
3-Sex a) Male	- 0.633
b) Female	- 0.766
4-Grade a) 4th Grade	- 3.475
b) 5th Grade	- 2.700
c) 6th Grade	- 1.325

TABLE 18
ANALYSIS OF VARIANCE SUMMARY TABLE
TOTAL BATTERY SCORES

Source of Variation	Degrees of Freedom	Sums of Squares	Mean Squares	F
A-Experimental-Control	1	54.613	54.613	1.03
B-Sex	1	0.053	0.053	.001
C-Grades (4th, 5th, 6th)	2	78.604	39.302	.740
A + B	1	4.813	4.813	.091
A + C	2	31.381	15.690	.298
B + C	2	16.471	8.235	.158
Residual	2	105.101	52.550	

TABLE 19
ANALYSIS OF VARIANCE TEST SUMMARY TABLE
CATEGORICAL SCORES

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F
A-Sex	1	0.013	0.013	.0002
B-Grade	2	43.520	21.760	.4128
C-Category	5	210.357	42.071	.7982
A + B	2	152.900	76.450	1.450
A + C	5	321.511	64.302	1.220
B + C	10	258.219	25.821	.480
Residual	10	527.056	52.705	

TABLE 20
SUMMARY OF CHANGES IN VIEWING TIME
(AVERAGE HOURS PER DAY)

Grade	Sex	Pre- Experiment	<u>During Experiment</u>					
			Category					
			1	2	3	4	5	6
4th	Male	2.4	2.5	2.0	2.7	3.0	3.1	3.0
	Female	2.6	2.7	1.8	3.0	3.2	3.4	3.1
5th	Male	2.2	2.9	2.3	3.0	3.2	3.5	3.2
	Female	2.4	2.4	1.8	3.2	3.5	3.5	3.1
6th	Male	2.0	2.8	2.3	2.9	3.4	3.3	3.2
	Female	2.1	2.6	2.0	2.5	3.2	3.6	3.1

TABLE 21

SUMMARY OF CHANGES BY CATEGORY TYPE-PRETEST TO POSTTEST (ALL GRADES)

Males	Test I (Pretest)	Score	Males	Test II (Posttest)	Score
Category 1 (Educational T.V.)		72.7	Category 4 (Comedy)		65.6
Category 5 (Drama)		72.9	Category 3 (Cartoons)		68.0
Category 6 (Everything)		75.4	Category 1 (Educational T.V.)		70.6
Category 4 (Comedy)		75.4	Category 2 (Sports)		76.5
Category 3 (Cartoons)		76.9	Category 5 (Drama)		76.6
Category 2 (Sports)		77.1	Category 6 (Everything)		76.8
Total Mean of Means		75.4	Total Mean of Means		72.4
Females	Test I (Pretest)	Score	Females	Test II (Posttest)	Score
Category 1 (Educational T.V.)		69.9	Category 3 (Cartoons)		67.9
Category 3 (Cartoons)		70.8	Category 1 (Educational T.V.)		67.9
Category 5 (Drama)		74.0	Category 6 (Everything)		69.6
Category 4 (Comedy)		74.1	Category 5 (Drama)		70.9
Category 5 (Everything)		76.6	Category 4 (Comedy)		71.1
Category 2 (Sports)		76.7	Category 2 (Sports)		74.4
Total Mean of Means		73.6	Total Mean of Means		70.2
					114

TABLE 21--Continued

Males + Females	Test I (Pretest)	Score	Males + Females	Test II (Posttest)	Score
Category 1 (Educational T.V.)		71.3	Category 3 (Cartoons)		67.9
Category 5 (Drama)		73.4	Category 4 (Comedy)		58.3
Category 3 (Cartoons)		73.8	Category 1 (Educational T.V.)		69.2
Category 4 (Comedy)		74.7	Category 6 (Everything)		73.2
Category 6 (Everything)		76.0	Category 5 (Drama)		73.7
Category 2 (Sports)		76.9	Category 2 (Sports)		75.4
Total Mean of Means		74.4	Total Mean of Means		71.2
Categories	Change Males	Change Females	Males & Females		
1 Educational T.V.	-2	-1	-2		
2 Sports	-2	0	0		
3 Cartoons	-3	-1	-2		
4 Comedy	-3	+1	-2		
5 Drama	+3	+1	+3		
6 Everything	+3	-2	-1		
					115

Findings

Some mention has been made of the statistical technique used because it tends to impart a conservative bias to the findings. The findings fall into two categories. The first deals with the individual hypothesis and the second deals with trends and indicated patterns.

Hypothesis 1. The findings indicate that watching an increased amount of television programs does not significantly affect performance in creative areas when total scores are considered.

Hypothesis 2. The findings indicate that viewing a certain type of program exclusively does not affect performance on creative areas when total scores are considered.

Hypothesis 3. The findings indicate that changes in scores on various parts of creativity tests are affected when various increases are made in viewing time. The area which has the greatest significance (.05 level) is the figural tests.

Hypothesis 4. The findings indicate that scores on various areas of creativity tests are affected by watching particular categories of television. The area which has the greatest significance is the figural tests, and the greatest interaction stems from sixth grade females watching cartoons.

Hypotheses 5-8. The findings indicate that there is little significance to sex from watching increased amounts of television or specific categories.

Hypotheses 9-10. The findings indicate that there is little significant difference in creative performance due to watching either increased amounts of television or a particular category of program when grades are compared by total scores.

Trends

When the control group's scores on pretests and posttests were compared, it was noticed that 66 per cent of the possible 72 scores had increased. This seemingly important change is probably accounted for because of the "testing" effect described by Campbell and Stanley (22). When the experimental group's scores were compared, it was discovered that only 26 per cent of the possible 72 scores had increased. Analyzing these figures with the less conservative statistical techniques of the sign-rank test, a significant trend is uncovered. As indicated by the analysis of variance the trend is most significant in the figural areas of the creativity tests. Overall, females seem to be more affected than males, and younger grades are more affected than older ones. All the trends indicate a depressing effect except in verbal areas. Watching increased amounts of television, or a particular

category of program increases the verbal performance of males, females, and all grades. Males seem to benefit slightly more than females, and older grades more than younger grades.

The analysis of the various categories of program indicate that the worst category; i.e., the category which depresses creativity scores to the greatest extent, is cartoons, followed closely by comedy programs. The cartoons have the greatest effect on males while the comedy programs depress female scores to a much greater extent than cartoons are able to affect them. Educational television programs depress male scores to a slight extent, but do not affect female scores. The category of dramatic programs demonstrates a slight beneficial effect for both males and females, while the category of sports beneficially affects males and adversely affects females. Just watching an increased amount of programs has a mixed effect. No discernible trend can be structured. In general, the younger children are more affected than older children. Males and females are affected by television to a similar extent, though scores originating from any particular category are usually different when scores are contrasted by sex. Males seem more affected at younger ages and females at older ones.

CHAPTER V

SUMMARY, CONCLUSIONS, RECOMMENDATIONS

Summary

This study sought to determine what effect viewing increased amounts of television programs, or viewing specified categories of television programs, would have on the performance by highly intelligent children on a battery of creativity tests. The period of increased viewing was three weeks in length.

A review of the literature indicated that television played a great part in the lives of American children, and specifically that television influenced the social life of children to a marked extent. Educational research has been almost exclusively structured on cognitive, non-divergent learning. This study sought to determine learning in divergent fields.

Procedure

Two hundred and fifty children who had been identified as gifted children by the State of California participated in the study. The children, from 4th, 5th, and 6th grade classes in a large suburban area were randomly divided into six categories corresponding with categories

of programs they were to view exclusively. The categories were: Educational T.V., Sports, Cartoons, Comedies, Dramatic Shows, and Everything. Each child kept a journal where the daily viewing was notated.

The assessment device for creative performance were tests developed by Guilford, Merrifield and others to analyze sections of their structure of intellect model. The battery was comprised of five sections known as: Verbal, Consequential, Figural, Mathematical, and Creative. Scores were combined to create a total score.

The basic statistical tool was the analysis of variance model where the independent variables were sex, grade, and category of television watched, and the dependent variable was the changed score derived from comparing the pretest scores with the posttest scores, and additionally comparing those changed scores with the scores of the control group.

Findings

"Testing" effects produced increased scores in the control group. Thus, one would normally expect scores in the experimental group to have increased as well. Except for verbal abilities, scores in the experimental group decreased.

The decrease was not of decided statistical significance in any area except figural production. Children

in the younger grades are affected to a greater extent than children in the older ones, and males and females are affected to a similar amount, but not to a similar degree, in the same areas. Watching cartoons decreased scores to the greatest amount and only dramatic programs increased scores.

Conclusions

The results of this study are important but not dramatic. They will not verify a statement that television destroys creative ability. Indeed, there is strong suggestion that television actually increases abilities in some areas. The results of this study do indicate that increasing the amount of programs a student watches, or forcing exclusive categories of television production upon a child, will generally depress creative performance in figural areas to a large extent, and to a lesser extent in other areas such as Consequential thought, Creative (Remote) thought, and Mathematical thought. In general, the effect of watching increased amounts of television are more apparent with the flexibility of thinking than with the fluency of production. One could summarize this by saying that with increased television a student could produce more thought, but be able to do less with it than before.

Recommendations

This study was intended only as a beginning. Certainly the researcher did not possess the money, material and personnel to perform a definitive study. To do so would necessitate investigations in the following areas:

1. The study should be replicated with children of lower intelligence quotients than those studied in this experiment. Such a study will detail the factor of intelligence in the effects of television. It will also explain the differing effects of television on variables such as sex and grade. Some specific questions it would help clarify are: the relationship of category to effect on creative performance; the different effects on males and females; the different effects on the younger grades as compared to the older grades.

2. Though it is very difficult this experiment should be replicated with much more stringent controls. Some attempt should be made to control the variable of viewing. This study could not monitor the children's viewing habits. It is conceivable that the results obtained in this study stem more from facts of viewing than effects of the program. For example, it is possible that solitary viewing insures a greater decrease in creative performance than does viewing in a family situation.

3. Though it is very difficult, this experiment should be replicated but continued in time. This experiment was conducted over a three-week period. It is possible that continuing the experiment for another three weeks would have uncovered far stronger significance.

4. This experiment should be replicated in different areas of the country to test other variables such as race, cultural background, economic levels, geographic location, etc.

5. During the course of this experiment the limitations of existing creativity assessment tools became apparent. The present paper and pencil tests do not yield great results. Creativity is a personality factor yet the present series of tests yield information only in the process factor. Secondly, there is only a limited availability of materials for use with young children. A study of the research indicates a desperate need for better tools, and more research dealing with longevity studies.

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APPENDIXES

C O P Y

Stanley L. Stern
442 N. La Cienega
LA Calif. 90048

Dear Principal:

Before a child enters the first grade in modern America he will have spent more time in front of a TV set than he will spend in the entire first six grades of elementary school. Studies have been made showing that in most families there is little or no supervision of a child's TV Bill of Fare. Children choose their own programs. Twenty-five per cent of all the families in America have given their youngsters their own TV sets.

What is the effect of all this? The research has been very shoddy, given the overwhelming importance of the subject. Some studies have been made which link TV with violent, anti-social behavior in certain groups of children. Other studies have been concerned with demonstrating that children can learn certain educational subjects from televised instruction. Educators have been chiefly concerned with factors which aid the effectiveness of TV as a teaching tool.

There have been very, very few studies dealing with the effect of TV on growing minds, and practically no useful research that made use of programs the children were

actually watching.

The purpose of my study is to analyze the effect a certain type of program will have on a certain aspect of intelligence. Highly gifted children have been selected to control intelligence (IQ) as an independent variable. Groups of these children will be asked to watch certain types of programs exclusively for a period of time. The types of programs are: educational, cartoons, sports, musical, comedy, and realistic drama. All children will be pre- and post-tested with tests devised by Dr. J. P. Guilford of USC.

This data should determine which type of program exerts which type of intellectual ability. Television is the single most important influence in children's lives. This study should help us deal with TV on realistic terms because it will provide some of the first factual proof of what TV actually does to developing intelligence and personalities.

Sincerely yours,

Stanley L. Stern

Stanley L. Stern

cc: Eileene LaBarthe
G. W. Cowan

Principals and MWC Teachers at Carrillo, Fremont and
Simmons Schools

C O P Y

STANLEY L. STERN
442 N. La Cienega
L.A. California

Dear Parents,

Children watch TV. Scientists investigating modern children believe the average child spends about 4,000 hours in front of a TV set before he even gets to the first grade.

What is the effect of all this TV watching? Does TV make children smarter? Does it make them stupid? Does it effect intelligent children in the same way it effects less intelligent ones? We don't know. There has been very little useful research performed with popular TV; the programs children actually watch.

I am conducting a study for the University of Southern California which should help throw some light into this dark tunnel. Children in this school district are being asked to spend some time watching certain types of programs. After viewing these programs, and when the study begins, the children will be given a special group intelligence test. Their answers on these tests should produce some important information about the effects of TV. This information will help educators and parents to more fully understand the modern child.

I hope you will be able to help me in this important project.

Sincerely yours,

Stanley L. Stern

Note: (by Jeanne L. Delp
Garden Grove Unified School District)

This study has the approval of the Garden Grove Unified School District. Major Work Class teachers have been asked by me to cooperate in this important project. If you have any concerns, please feel free to call, (638-6489). A summary of the results of the study will be available. The report will deal with groups of gifted children, not individual children.

Sincerely,
Jeanne L. Delp, Coordinator
Gifted Program

C O P Y

Dear Children,

Everybody watches TV in America. Some people think we watch more TV than we spend time doing anything else. We certainly spend more time watching TV than we do going to school.

What does all this watching do to people? Does it make them happier, or smarter, or angrier, or even more stupid than those who never watch TV at all? Nobody knows. Scientists have not yet looked into popular TV, the programs kids really like to watch.

I would like you to help me find out what TV is actually doing. To do this we will have to set up a kind of experiment. First we need to know how much TV you are watching right now. At the back of this paper is a journal which I would like you to fill out. Your teacher will collect it. When you fill it out we will be able to tell you not only how much TV you watch, but what kind of programs you really like.

Later on I will ask you to watch only certain type programs for a short period of time. This will help us find out what kind of TV has the greatest effect on children. I will also ask you to play a set of word and number games to see how much TV has helped your thinking. These games have many more than one right answer, and some have drawings.

I really hope you will be able to help me.

Thank you,

Stanley L. Stern

